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THE SPECIES
OF
RHODODENDRON

PUBLISHED BY
THE RHODODENDRON SOCIETY
1930

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PREFACE TO THE SECOND EDITION

When "The Species of Rhododendron" was first published in 1930, a considerable number of the specimens of the explorers' finds still awaited determination.

As many of these have proved to be plants of considerable importance in the genus, they have now been added in this second edition, thanks to the kindness of the late Mr. Tagg and Dr. J. M. Cowan of the Royal Botanic Garden, Edinburgh, and Dr. Hutchinson of the Royal Botanic Gardens, Kew.

As always, Sir William Wright Smith has been most kind.

The 31 species have been inserted as follows :—

amagianum, 112A.
auritum, 156A.
Beanianum, 518A.
Bulu, 392A.
compactum, 398A.
concatenans, 222A.
erosum, 222B.
exquisetum, 774A.
fimbriatum, 404A.
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Headfortianum, 492A.
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sordidum, 302B.
spilanthum, 428A.
tsariense, 178B.
venator, 368A.
viridiscens, 754A.
xanthocodon, 792A.

For the Rhododendron Society,

J. B. STEVENSON,
Editor.

TOWER COURT, ASCOT, 1947.

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INTRODUCTION

THE purpose of this book is to provide a useful handbook to the species of Rhododendron. The botanical explorations of the last quarter of a century have added a surprising number of new species to a genus remarkable for its horticultural interest. The majority of the additions have come from Western China and the adjoining parts of Tibet and Burma. The descriptions of the new species have appeared in many diverse publications. So great has been the influx and so scattered the publications that it is a matter of great labour for those interested in the genus to assemble the necessary data relative to each species and to obtain a general view of the ramifications of the genus.

The aim of those responsible for the issue of the present handbook has been to provide a single-page description of each species and to attempt to group the species into series so as to facilitate understanding and recognition. The first half of this task, though extensive, has been accomplished with a degree of completeness, but the second part is admittedly tentative and will no doubt require adjustment. There are many difficulties. The number of species is in itself somewhat overwhelming ; many are inadequately known ; sometimes only imperfect dried specimens are available ; lines of demarcation between one series and another are sometimes definite, but in other cases very difficult to draw ; observations on living material are often not forthcoming, as many species are not yet in cultivation ; the original specimens on which the descriptions are based—what are known as the *types*—are to be found some in one herbarium and some in another, scattered throughout the botanical institutions of the world.

It is therefore with no idea of finality that the present book appears. Though one may assume that the majority of the species of the genus are known, there are many still to be found, for the geographical area of the genus is as yet inadequately explored.

Evidently, therefore, a complete monograph of the genus is not yet possible. But there is an urgent need for a book, however imperfect, which will give a summary of the present position. Some kind of guide to the many species now in cultivation is a present necessity, and one element in the problem is that it should be available without undue delay. This consideration has had two consequences. It has been judged expedient to reserve the Malayan and New Guinea species for future consideration. These are, however, rare in cultivation, are somewhat inadequately represented in herbaria, and their study would add considerably to the time necessary for the production of this handbook. A list, however, of these species will be found in Appendix I. The other result is that the validity of each series must be considered an open question. The arrangement is essentially tentative. Much work remains to be done before the problems herein involved can be taken to be satisfactorily solved.

Those who have grown and have studied Rhododendrons know that they tend to fall into several natural groups. Sometimes these groups or series are in accord with the geographical distribution, but exceptions are numerous. Just as the number of species in cultivation of this magnificent genus has increased, so has the need for some more certain means of recognition—some guide in the wilderness. When a new Rhododendron " swims into the ken " of the botanist or horticulturist, his first endeavour is to find its nearest relation in the genus—to place it in its group and to note how it differs from its allies. The arrangement into series is a means to this end. Certain of the better known species have been chosen as centres and in many cases give their names to the respective series. Under the wing of each representative species are placed all the species deemed to be of kinship with it. This is in the main the plan of this handbook. There is bound to be diversity of opinion as to the placing of the units. Agreement at this stage, when so much remains to be unravelled, cannot be expected. But a basis for discussion will be afforded.

Those responsible for the production are well aware that much has yet to be added and much to be amended.

As time was a consideration, the work is the result of the labours of three authors and not of one. The Rhododendron Society has been fortunate in securing the services of three botanists who in recent years have devoted considerable attention to the genus. The elepidote Rhododendrons, excepting two small series, have been worked out by Mr. H. F. Tagg, of the Royal Botanic Garden, Edinburgh, who for many years has devoted himself to the study of the genus; Mr. Tagg also assisted at the beginning of the serialisation of the genus which was started by that great botanist, the late Sir Isaac Bayley Balfour. The lepidote Rhododendrons, a numerous and difficult assemblage, have been dealt with by Mr. J. Hutchinson, of the Royal Gardens, Kew. The important group of the Azaleas and their allies has been undertaken by Mr. Alfred Rehder of the Arnold Arboretum. This division of labour has no doubt led to a certain diversity of treatment, but as these three groups are natural associations in the genus, there is no real loss of unity.

A certain number of illustrations has been incorporated in the book. These are intended chiefly as explanatory of the characters of each series. Considerations of expense have made it necessary to limit the number of such figures.

How is such a book to be used? There is no easy path to a knowledge of this genus. Those who have already gone through the travail of making acquaintance with the many species in cultivation will need but little guidance. They will already know the landmarks. Those who cannot claim such foreknowledge would be well advised to begin with the leading species in each series, to visit some representative collection where they can be seen, and to note the characters by which each series can be recognised. Our friends and acquaintances are best known when seen often, and it is the same with the Rhododendrons. To each series is attached an introduction with key to the species included within it. This key may be easy to turn or it may not.

It depends on the series. The species in some series fall into line readily and easily; in some they almost defy analysis and alignment. Do not expect, therefore, machine-like accuracy in your first endeavours with the keys. Their use requires a long apprenticeship and a good deal of practice.

There remains the question of the characters to be deemed important in the identification of Rhododendron species. That is too wide a question to be solved in an introduction. One may quote once more such ancient items of advice as *Experientia docet* and *Solvitur ambulando*. The habit of the plant is of some moment; so is the shape of the leaf; the presence or absence of "lepidote" scales; the occurrence of hairs forming an indumentum; the presence of glands and their appearance; the number of parts in calyx and in corolla; the shape and colour of the corolla; the number of stamens and their position; the shape of the ovary and also the appearance of the fruit. An endeavour has been made in the introductory matter prefacing each series to give the broad characters serving to indicate its boundaries. And only practice can give facility in recognition of the series and their component species. Make the acquaintance in flower of as many as possible of the representative species and the path of progress will not be too hard. Do not trust overmuch to the written word. There are many problems in this record quite unsolved or but half-solved. Aid us to solve them. The present book will have served its purpose if it affords some clue to the existing maze, and in that expectation it is issued.

The Rhododendron Society desire to acknowledge the great assistance that has been given in the preparation of this handbook by Mr. George Forrest and many others, and in particular they wish to record their gratitude and thanks to Professor Wright Smith, M.A., for much kind counsel and help.

For the Rhododendron Society,

J. B. STEVENSON,
Editor.

TOWER COURT, ASCOT, 1930.

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SERIES ALBIFLORUM

(Syn.: AZALEASTRUM, *Maxim.*, in part.)

This series contains only one species and is closely related to the Ovatum series, from which it chiefly differs in the 10 stamens much shorter than the white unspotted corolla, the floral buds scattered along the branches, not crowded at the apex, the fewer silky-pubescent bud-scales and the deciduous membranous leaves.

R. Warrenii, (A. Nels.) Macbride, from Colorado is a little known species said to differ in its glandular-ciliate leaves, but doubtfully distinct from *R. albiflorum*.

A. R.

RHODODENDRON ALBIFLORUM, *Hooker*.

A. Flowering shoot. B. Pistil. C. Stamen. D. Anther. E. Fruit.

RHODODENDRON ALBIFLORUM, *Hooker, Fl. Bor. Am.*, vol. 2, 43, t. 133 (1834).

(Syn.: AZALEA ALBIFLORA, *Kuntze*; AZALEASTRUM ALBIFLORUM, *Rydb.*)

ILLUSTRATION—Hooker in *Bot. Mag.*, t. 3670 (1839).

HABIT: shrub to 6 ft. tall, with erect or ascending branches; young shoots with scattered loosely appressed brown hairs and sparse partly glandular pilose hairs, becoming glabrescent and light or yellowish-brown, and light grey or greyish-brown after the second year.

FLORAL WINTER-BUDS: oblong-ovoid, with 4-5 greenish-yellow or light yellowish-brown outer acuminulate scales, ciliolate and with appressed brown silky hairs along the middle.

LEAVES: deciduous, membranous, scattered, or clustered at the end of short branchlets, elliptic-oblong to oblong, sometimes broadest above the middle, rarely below, 1-2¾ in. long and ⅖-½, rarely to 1 in. broad, acute, cuneate at base, slightly ciliate and often somewhat undulate at the margin, bright green above and, when young, clothed, as also on the midrib beneath, with appressed long brown hairs, otherwise glabrous, pale green beneath; petiole ¼-⅛ in. long, with appressed brown hairs.

INFLORESCENCE: 1-2-flowered, from axillary buds along the branchlets of the previous year; flowers appearing after the leaves, nodding; pedicels glandular-pubescent, ⅕-⅖ in. long.

CALYX: with oval to oblong-obovate lobes, ⅓-½ in. long, about one-third shorter than corolla, glandular-ciliate, with scattered long brown hairs and glandular-pubescent on back.

COROLLA: rotate-campanulate, about ½ in. across, white, rarely spotted yellow or orange (f. *poikilon*, J. K. Henry), glabrous outside, with ovate lobes about as long or longer than tube which is villous inside.

STAMENS: 10, shorter than corolla; filaments pubescent below the middle.

PISTIL: slightly shorter than stamens; ovary glandular-pilose; style straight, dilated below the large-lobed stigma, pilose below the middle.

CAPSULE: broad-ovoid, about ⅓ in. long, shorter than the persistent calyx-lobes, glandular-setose.

HABITAT: North America, Rocky Mountains from British Columbia and Alberta to Oregon and Colorado.

A distinct species characterised by the small white rotate-campanulate flowers produced solitary or in pairs from lateral buds along the branchlets, the 10 stamens, and the large calyx enveloping the ovoid capsule.

ANTHOPOGON SERIES

General Characters :—Small shrubs. Leaves evergreen, densely scaly below. Inflorescence terminal, capitate, many-flowered. Flowers mostly white or yellow, rarely pink. Calyx large for the size of the flower, ciliate. Corolla narrowly tubular with a spreading 5-lobed limb, rarely scaly outside. Stamens 5-10, included in the corolla-tube, mostly glabrous. Ovary 5-celled ; style very short, thick, glabrous. Capsule very small, scaly.

Distribution : Afghanistan to the Eastern Himalaya, Southern Tibet and Szechuan.

A small series very closely allied to and perhaps not separable by any one character from the *Cephalanthum* group. A useful diagnostic feature is whether the leaf-bud-scales (the "perulae") remain on the branchlets or fall off on the unfolding of the leaves. The reduction to 5 stamens, which are hidden in the corolla-tube, shows considerable advancement in structure, and this group may be looked upon as one of the highest evolved of the small-leaved species.

J. H.

KEY TO THE SPECIES

A. Stamens 10 ; winter bud-scales early deciduous ; flowers white tinged with rose ; calyx-lobes densely ciliate **Collettianum.**

A. Stamens up to 8 :

B. Winter bud-scales persistent ; flowers yellow ; calyx densely ciliate . . . . . **hypenanthum.**

B. Winter bud-scales deciduous :

C. Flowers yellow all over ; calyx glabrous or slightly ciliate on the margin ; leaves glabrous above . **haemonium.**

C. Flowers pink ; calyx finely ciliate on the margin ; leaves slightly scaly above . . . . . **anthopogon.**

C. Flowers white or blue or with yellow tube ; calyx densely ciliate ; leaves soon glabrous above :

D. Corolla-tube not yellow ; calyx-lobes and corolla-tube not scaly outside . . . . . **rufescens.**

D. Corolla-tube yellow ; calyx-lobes and corolla-tube scaly outside . . . . . **tsarongense.**

RHODODENDRON ANTHOPOGON, *D. Don.*

ILLUSTRATION—

HABIT : shrub ; branchlets short and twiggy, slightly setulose, scaly when young ; *winter bud-scales deciduous.*

LEAVES : obovate-elliptic, obtusely mucronate at the apex, rounded at the base, 1-1½ in. long, ½-1 in. broad, slightly scaly above, very densely so below, the larger ones below dry and flakey ; leaf-stalks ¼ in. long, scaly above.

INFLORESCENCE : terminal, subumbellate, several-flowered ; flower-stalks about ⅛ in. long, *slightly scaly.*

FLOWERS : pink.

RHODODENDRON ANTHOPOGON, *D. Don.* Flowers pink.
A. Typical leaf. B. Lower portion of leaf showing the scales. C. Calyx and stamens. D. Flower. E. Stamen. F. Pistil.

CALYX : deeply lobed, lobes broadly elliptic, ¼ in. long, *finely ciliate* on the margin.

COROLLA : narrowly tubular, ¾ in. long, not scaly outside.

STAMENS : 6-8, included, glabrous.

OVARY : scaly, 4-5-celled ; style glabrous, very short and thick.

CAPSULE : ⅛ in. long, embraced by the persistent calyx-lobes.

HABITAT : Eastern Himalaya and Southern Tibet (Nepal and Sikkim), 11,000-16,000 ft.

RHODODENDRON COLLETTIANUM, *Aitch. & Hemsl.*

ILLUSTRATION—*Journ. Hort. Ser.* 3, 36 : p. 331.

HABIT : shrub, several feet high ; branchlets covered with scurfy scales ; *leaf-bud-scales early deciduous.*

LEAVES : broadly lanceolate, acute, $1\frac{3}{4}$-$2\frac{1}{2}$ in. long, about $\frac{3}{4}$ in. broad, bright green above and glabrous, covered below with hair-like scales, yellowish when dry ; leaf-stalks $\frac{1}{4}$ in. long.

INFLORESCENCE : terminal, capitate, many-flowered ; flower-bud-scales soon deciduous ; flower-stalks $\frac{1}{6}$ in. long, scaly.

FLOWERS : white, tinged with rose.

CALYX : well developed, $\frac{1}{6}$ in. long, lobes scaly outside and *densely ciliate.*

COROLLA : narrowly tubular, 1 in. long, not scaly outside.

STAMENS : 10, included, *hairy towards the base.*

OVARY : scaly ; style short, glabrous.

CAPSULE : $\frac{1}{4}$ in. long, covered with very small scales.

HABITAT : Afghanistan and Indian frontier, 10,000-13,000 ft.

RHODODENDRON HAEMONIUM, *Balf. f. & Cooper.*

Illustration—

Habit : shrub ; branchlets twiggy, shortly setulose and scaly ; *winter bud-scales early deciduous.*

Leaves : narrowly elliptic, obtusely mucronate, slightly narrowed at the base, about 1 in. long and $\frac{1}{2}$ in. broad, glabrous and dull above, very densely scaly below ; leaf-stalks $\frac{1}{6}$ in. long, scaly.

Inflorescence : terminal, several-flowered ; flower-stalks $\frac{1}{1\frac{1}{2}}$ in. long, *densely scaly.*

Flowers : yellow.

Calyx : deeply lobed, lobes broadly elliptic, $\frac{1}{6}$ in. long, *glabrous* or *slightly ciliate.*

Corolla : shortly tubular, villous within, about $\frac{1}{2}$ in. long.

Stamens : 5-6, glabrous.

Ovary : scaly ; style very short, glabrous.

Capsule :

Habitat : Bhutan, 13,000 ft.

RHODODENDRON HYPENANTHUM, *Balf. f.*

ILLUSTRATION—*Bot. Mag.*, t. 3947 (as *R. anthopogon*).

HABIT : shrub ; branchlets short and twiggy, slightly scabrid, the young ones scaly ; *winter bud-scales persistent* for several years.

LEAVES : narrowly obovate-elliptic, obtusely mucronate at the apex, rounded to slightly cuneate at the base, about $1\frac{1}{4}$ in. long and $\frac{3}{8}$ in. broad, soon glabrous above, densely scaly below as in *R. anthopogon* ; leaf-stalks $\frac{1}{4}$ in. long.

INFLORESCENCE : terminal, as in *R. anthopogon*.

FLOWERS : yellow.

CALYX : etc. as in *R. anthopogon*, but calyx-lobes more *densely ciliate*.

HABITAT : Western Himalaya, 11,000-15,000 ft.

RHODODENDRON RUFESCENS, *Franch.*

Illustration—

Habit : shrub 1-2 ft. high ; branchlets short and twiggy, scaly and slightly setulose ; the *winter bud-scales early deciduous.*

Leaves : oblong to oblong-elliptic, obtusely mucronate at the apex, rounded or subacute at the base, about $\frac{3}{4}$ in. long and $\frac{1}{3}$-$\frac{1}{2}$ in. broad, glabrous above, very densely covered with reddish-purple scales below except the straw-coloured midrib ; leaf-stalks $\frac{1}{6}$ in. long, scaly.

Inflorescence : terminal, several-flowered ; flower-stalks nearly glabrous.

Flowers : white to pale blue.

Calyx : deeply lobed, lobes oblong-elliptic, $\frac{1}{8}$ in. long, *densely ciliate.*

Corolla : narrowly tubular, $\frac{3}{4}$ in. long, not scaly outside.

Stamens : 5, glabrous.

Ovary : scaly, style glabrous, very short and thick.

Capsule :

Habitat : Szechuan, 11,000-13,000 ft.

RHODODENDRON TSARONGENSE, *Balf. f. & Forrest.*

Illustration—

Habit : shrub 2 ft. high ; branchlets with a dense coating of scales ; *winter bud-scales early deciduous.*

Leaves : aromatic, oblong or oblong-elliptic, apex obtusely mucronate, $\frac{3}{4}$ in. long, $\frac{1}{3}$ in. broad, soon glabrous above, densely covered with reddish scales below ; leaf-stalks $\frac{1}{8}$ in. long, scaly.

Inflorescence : terminal, many-flowered ; flower-stalks $\frac{1}{6}$ in. long, scales.

Flowers : white with yellow tube.

Calyx : deeply 5-lobed, $\frac{1}{3}$ in. long or less, lobes unequal, *fringed with hairs,* puberulous and scaly outside.

Corolla : $\frac{2}{3}$ in. long, narrowly tubular, tube sparingly scaly outside, villous inside.

Stamens : 5, included, finely hairy in the lower part.

Ovary : scaly, style short and stout, glabrous.

Capsule :

Habitat : South-Eastern Tibet, 14,000 ft.

ARBOREUM SERIES

R. arboreum is a familiar plant and may well serve to indicate the chief characters of the series in which is included the somewhat divergent subseries Argyrophyllum with a facies of its own. The typical members of the series are characterised by their tree habit and dense many-flowered trusses, whereas the associated subseries tends more to shrub formation and laxer trusses.

Its nearest allies are Barbatum and Irroratum. Both of these may well be regarded as parallel developments to the series Arboreum, or even as specialised extensions of the Arboreum type. Of the three, Arboreum has the widest distribution, although not prolific in number of species. The series Barbatum occupies much the same area as the series Arboreum except for the extension of the latter into Southern India. It deviates from Arboreum in the character of its foliage and in the marked development of bristles or coarse hairs which are often localised on the petiole or on the midrib. As evidence of parallelism one may note that the Himalayan members of the Barbatum series invite comparison with the subseries Arboreum, while the more shrubby Chinese members correspond as regards habit and truss with the subseries Argyrophyllum. On the other hand, the series Irroratum, numerous in species, with its centre in Yunnan, is so close an ally that it is difficult to draw a definite line between them except on minor foliage characters such as the general tendency to disappearance of indumentum in the Irroratums. They are usually shrubs, not trees, but in truss and flower-characters their kinship with Arboreum is very evident.

KEY TO THE SUBSERIES

1. Chiefly trees with bole.
   Truss compact, many-flowered ; pedicels stout, not exceeding 1 cm.
   Corolla tubular-campanulate, base broad.
   Flowers typically deep red to magenta. **Arboreum.**

2. Chiefly shrubs without bole.
   Truss lax, few-flowered ; pedicels slender, exceeding 1 cm.
   Corolla funnel-shaped, base narrow.
   Flowers usually white to rose, rarely purple. **Argyrophyllum.**

H. F. T.

ARBOREUM SERIES

SUBSERIES ARBOREUM

This is a small subseries in so far as number of species is concerned; but as regards geographical distribution it extends over a considerable area. It is found throughout the Himalayas, and crossing the Brahmaputra it reaches the western ranges of Yunnan and the adjoining parts of Tibet and Burma. Southwards it appears in Manipur, in the Nilgherry Hills and in Ceylon.

Apart from *R. niveum* and *R. peramoenum*, which are restricted in their distribution, the subseries might almost be regarded as composed of *R. arboreum* and its numerous geographical forms. Where these forms occur in isolated areas, Yunnan, Manipur, Southern India and Ceylon, they present such divergences from the typical Himalayan plant as to almost warrant being regarded as distinct species.

In contrast to the subseries Argyrophyllum, the species of this subseries are of a tree type, forming usually a distinct bole. Other characters tending to discriminate this from the neighbouring subseries are the less plastered indumentum, the denser truss, the greater number of flowers, the broader base to the corolla, the more prominent nectaries, the greater prevalence of darker colours such as the deeper reds, and the stouter broad fruit.

KEY TO THE SPECIES

A. Leaves oblong-lanceolate, oblong-oblanceolate or elliptic to ovate; apex somewhat obtuse; base cuneate to obtuse or rounded:
  B. Primary veins of leaf under surface bare or glabrescent; marginal venation evident; ovary 10-chambered:
    C. Indumentum typically thin (film-like) . . **arboreum.**
    CC. Indumentum more or less spongy . . **Delavayi.**
  BB. Primary veins of leaf under surface clad with tomentum; marginal venation obscure; ovary 6-chambered **niveum.**
AA. Leaves very narrow-lanceolate, tapered at both ends **peramoenum.**

RHODODENDRON ARBOREUM, *Smith.* (Modified copy of t. 168 in *Hook. Exot. Fl.*)

A. Flowering shoot. B. Section of ovary. C. Corolla—side view. D. Stamens and style. E. Pistil. F. Anther. G. Bract. H. Corolla opened out to show basal nectaries.

All except B and F reduced a little more than $\frac{1}{2}$.

RHODODENDRON ARBOREUM, *Sm.* in *Exot. Bot.*, vol. 1 (1805) 9.

Illustrations—*Exot. Bot.*, vol. 1 (1805), t. 6 ; Lindl. in *Bot. Reg.*, t. 890 ; Hook., *Ex. Fl.*, t. 168.

Habit : a tree of 20-40 ft. (large trees in cultivation have a girth of 1-2 ft. at breast height), branched to near the base of the trunk.

Leaves : lamina oblong-lanceolate to oblong-oblanceolate, leathery, 10-20 cm. long, 3-6 cm. broad (much shorter and relatively broader in some of the subspecies) ; narrowed to apex ; base cuneate ; upper surface a rich green, glossy, at maturity glabrous, midrib grooved, primary veins somewhat deeply impressed ; under-surface indumentum white to fawn, cinnamon or rusty-brown, varying in consistency from a thin film to a thicker and somewhat woolly felt, midrib prominent, primary veins 18-22 on each side prominent greenish, glabrescent ; petiole 1-2 cm. long, rounded, very slightly grooved, at first whitish floccose above, glandular below.

Inflorescence : a large compact truss of about 20 flowers, 10-15 cm. across ; rhachis about 2 cm. long, tomentose.

Pedicels : about 8 mm. long, downy and sparsely glandular or more glandular than hairy.

Calyx : small, about 2-3 mm. long, a green basal rim with 5 small triangular lobes, more or less glandular and downy and fringed with hairs.

Corolla : tubular-campanulate, 4-5 cm. long, 4-5 cm. across, typically deep scarlet, tube fleshy with 5 prominent black-blotched nectar pouches at the base and marked all over inside with deep coloured dots ; lobes 5, 1·5 cm. long, 2-3 cm. broad, notched and somewhat waved at the margin.

Stamens : 10, subequal, 4-5 cm. long ; filaments white, glabrous.

Pistil : about 4·5 cm. long ; ovary conoid, white tomentose and in some forms also more or less glandular , style slightly curved towards the tip, glabrous.

Capsule : oblong-cylindric, about 3 cm. long, 7 mm. broad, straight or slightly curved, ribbed and roughened by vestiges of rusty hairs, 10-chambered.

Habitat : Temperate Himalaya ; Kashmir to Bhutan ; Khasia Mountains ; Ceylon. At 5000-10,000 ft. altitude.

In this widespread species the indumentum varies from a close plastered whitish coating to a looser felty or mealy state.

SUBSPECIES OF RHODODENDRON ARBOREUM

R. arboreum is represented in different provinces by several geographical forms or subspecies, some of which may have claims to specific rank equal to those of *R. Delavayi*. Certain of these have been described as species. The most important are the following :—

R. Campbelliae, *Hook. f.* in *Rhodo. Sikkim Himal.* (1849), t. 6.

ILLUSTRATION—*Ibid.*

A Sikkim-Himalayan subspecies which, according to Sir Joseph Hooker, is the ' prevailing plant ' on the summit of Tonglo. It differs from the type chiefly in the purplish-rose flowers and in the rufous or rusty tomentum of the leaves, which moreover are obtuse or cordate at the base.

R. cinnamomeum, *Wall. Cat.* 760 ; *Lindl.* in *Bot. Reg.* (1837), t. 1982.

ILLUSTRATION—*Ibid.*

This has a cinnamon-coloured loosely tomentose leaf-indumentum, which is more or less detersile on old leaves. The leaves are relatively small and the open-campanulate flowers are white or pale rose, with purple or yellowish spots.

R. Kingianum, *Watt.* MS. descript., *Hook. f.* in *Bot. Mag.*, vol. 126 (1900), t. 7696.

ILLUSTRATIONS—*Ibid.*, and *Gard. Chron.*, vol. 26, 3rd ser (1899), 306.

A very distinct subspecies characterised by the broad ovate-elliptic leaves, convex above and markedly bullate. The undersurface is clad with a dense fawn to tawny felt. The flower truss is compact and very much like that of typical *R. arboreum*. In cultivation it is a small bush of slow growth flowering much later than the typical species. It was originally raised from seed collected on the high mountains of Manipur.

R. nilagiricum, *Zenker* in *Plant. Nilag. et Ann. Sci. Nat.*, ser. 2, vol. 6 (1836), 150.

ILLUSTRATION—*Bot. Mag.*, vol. 74 (1848), t. 4381.

A subspecies from the Nilgherry Hills characterised by the marked rugosity of the broadly oblong-lanceolate to elliptic leaves clad with a loose rusty tomentum. The trusses are large and the flowers vary from deep crimson to a rose colour. In cultivation it forms a compact bushy plant.

Subspecies of **Rhododendron arboreum**—*Continued.*

R. Windsori, *Nutt.* in Hook. *Kew Gard. Misc.*, vol. 5 (1853), 357.

Illustration—*Bot. Mag.*, vol. 83 (1857), t. 5008.

A Bhutan plant discovered by Booth at 7000-9000 ft. altitude, on ridges and slopes of Roophrya. The leaves are obovate-lanceolate, at first silvery beneath, but at length pale brown. The flowers are a crimson scarlet. An outstanding feature of the plant in cultivation is the relatively long lanceolate acuminate lobes of the calyx.

R zeylanicum, *Hort., ex Loud. Encyc. Pl.* (1855), suppl. 2, 1364.

Illustrations—*R. Rollissonii,* Hort., in *Bot. Reg.*, vol. 29 (1843), t. 25, and in *Paxt. Fl. Gard.*, vol. 1 (1853), t. 7, appears to be the garden form of the Ceylon plant.

This is a Ceylon subspecies, with leaves fulvous beneath, recalling those of *R. Kingianum* in their bullate upper surface. The flowers are a rich pink, lighter in colour than those of *R. Kingianum.*

There are two colour forms worthy of mention :—

R. arboreum forma **album,** *Wall.* in *Pl. As. Rar.*, vol. 2, t. 23.

Illustrations—*Bot. Mag.*, vol. 61 (1834), t. 3290 ; Lindl., *Bot. Reg.*, vol. 20 (1835), t. 1684.

This form is very near to *R. arboreum,* subspecies *cinnamomeum*, but with the white purple-spotted open flowers in less compact trusses. The leaf under surface is cinnamon to pale brown. It is a native of the higher mountains in Nepal.

R. arboreum forma **roseum,** *Sweet* in *Brit. Fl. Gard.*, vol. 4, 2nd ser. (1838), t. 339.

Illustrations—*Ibid.*, and Lindl. in *Bot. Reg.*, vol. 15 (1829), t. 1240.

This is a form from Nepal, where Dr. Wallich found it common on Mount Sheopore. It grows to a fair-sized tree and is one of the hardiest forms of *R. arboreum.* The leaves are lanceolate, acute and narrowed to the base, dark green above and pale brown below. The flowers are a rich pink marked with numerous deeper coloured spots.

RHODODENDRON DELAVAYI, *Franch.* in *Bull. Soc. Bot. France*, vol. 33 (1886), 231.

(R. PILOVITTATUM, *Balf. f. & W. W. Sm.*)

ILLUSTRATION—*Bot. Mag.*, vol. 133 (1907), t. 8137.

HABIT : a shrub or tree varying much in height in the wild from shrubs of a few feet to large trees as much as 40 ft. ; young shoots white-floccose.

LEAVES : lamina leathery, oblong-lanceolate to oblong-oblanceolate, 7-15 cm. long, 2-3 cm. broad ; apex obtuse or acute ; base tapered ; upper surface light or dark green, that of young leaves punctulate with small glands and hair flocks, at maturity glabrous, midrib deeply grooved, primary veins 14-18 on each side impressed ; under surface clad with whitish, grey or fawn tomentum, thinnish, but of a somewhat spongy consistency, or at times more plastered, midrib very prominent, at first more or less glandular and floccose, later glabrous, primary veins slightly raised, glabrescent ; petiole 1·5-2 cm. long, white or tawny tomentose above, glabrescent below, more or less glandular.

INFLORESCENCE : a rounded compact umbel of 10-20 flowers ; rhachis about 1 cm. long, densely rufous-tomentose.

PEDICELS : about 1 cm. long, stout, densely fawn-tomentose, and also at times somewhat glandular.

CALYX : small, about 2 mm. long, with 5 broadly triangular teeth, tomentose and more or less glandular.

COROLLA : campanulate, 4-5 cm. long, bright cherry-crimson to deep crimson, fleshy with 5 basal nectar pouches ; lobes 5, 1·5 cm. long, 2-2·5 cm. broad, deeply notched.

STAMENS : 10, 2-4 cm. long ; filaments glabrous.

PISTIL : 4·5 cm. long ; ovary 8 mm. long, conoid, blunt, densely tomentose with fasciate hairs, and at times also glandular ; style glabrous.

CAPSULE : oblong, blunt, about 2 cm. long, 8 mm. broad, blackish and roughened with the remains of the rusty tomentum, 10-chambered.

HABITAT : Western Yunnan ; Burma. At 8000-10,000 ft. altitude.

R. Delavayi is the Chinese *R. arboreum*. It agrees in the general appearance of foliage, truss and flower. Midrib, pedicel and ovary in both show a tendency to the development of glands. The best distinguishing feature is in the indumentum , in *R. arboreum* it is usually thin and more or less plastered, whereas in *R. Delavayi* it is of a somewhat spongy texture, the surface often more or less fissured in a manner comparable to that seen in certain species of the Taliense series.

RHODODENDRON NIVEUM, *Hook. f.* in *Rhodo. Sikkim Himal. conspect.*, (1851) 4.

Illustration—*Bot. Mag.*, vol. 79 (1853), t. 4730.

Habit : a shrub or small tree of 12-15 ft. ; branches below inflorescences about 6 mm. diameter; young shoots clad with dense white felty tomentum.

Leaves : lamina obovate-lanceolate, 8-15 cm. long, 3·5-5·5 cm. broad ; apex obtuse or somewhat rounded ; base tapered to petiole, cuneate or obtuse ; upper surface of unfolding leaves sprinkled with white floccose hairs, at maturity glabrous except for traces of tomentum chiefly in the groove of the midrib, primary veins 14-16 on each side impressed ; under surface clad with felty tomentum, at first white, ultimately greyish-brown, midrib prominent, glabrescent, with scattered flecks of tomentum, primary veins slightly raised and clad with indumentum ; petiole 1-1·5 cm. long, grooved above, at first white, with felted tomentum, later greyish or glabrescent, eglandular.

Inflorescence : a rounded compact truss of 15-20 flowers ; rhachis about 2 cm. long, clad with fulvous or rusty hairs.

Pedicels: about 1 cm. long, densely white to rufous tomentose.

Calyx : very small, a thickened rim with 5 minute tomentose teeth.

Corolla : tubular-campanulate, 3·5 cm. long, magenta or purplish-lilac, with 5 deep-purple nectar pouches at the base of the tube ; lobes 5, 1·5 cm. long, 2 cm. broad, spreading, deeply notched.

Stamens : 10, unequal, 1·8-2·8 cm. long ; filaments glabrous.

Pistil : 3 cm. long ; ovary oblong, 6 mm. long, densely whitish to tawny tomentose ; style glabrous ; stigma small, hardly broader than style.

Capsule : ovoid-oblong, blunt, about 2 cm. long, 7 mm. broad, blackish, roughened with vestiges of ovary tomentum, 6-chambered.

Habitat : Sikkim Himalaya. Rocky valleys and ridges at 10,000-12,000 ft. altitude.

R. niveum is clearly of the Arboreum affinity in its tree-like habit, truss and flower. It is best distinguished from *R. arboreum* and its varieties by the felted tomentum clothing the lateral veins of the leaf and concealing the marginal venation. The truss of flowers is very compact. The leaves on the whole tend to be broader and blunter than in *R. arboreum*. A variety with a buff indumentum has been figured (*Bot. Mag.*, t. 6827) as var. *fulvum*.

RHODODENDRON SILVATICUM, *Cowan* in *Notes R.B.G. Edin.*, vol. 19 (1936), 185.

Illustration—

Habit : a large shrub or small tree up to 20 ft. ; young shoots clad at first with grey floccose tomentum, later glabrescent, chestnut-brown, those below inflorescence about 5 mm. in diameter.

Leaves : leathery, lamina oblong to oblong-lanceolate, 10-25 cm. long, 3·5-7·5 cm. broad ; apex obtuse or rounded, mucronate ; base tapered or rounded ; upper surface dark green with vestiges of scattered hairs, midrib deeply impressed, primary veins distinct, 16-20 on each side ; under surface light cinnamon-brown to olive-brown with a thin more or less persistent indumentum of two layers of branched hairs, the lower shortly and densely packed, the upper looser and more or less detersile ; midrib raised, sparsely tomentose ; primary veins prominent ; petiole stout, about 2 cm. long, grooved above, somewhat tomentose.

Inflorescence : a rounded compact umbel of about 18 flowers or more.

Pedicels : about 1 cm. long, tomentose.

Calyx : a mere rim, lobes minute.

Corolla : campanulate, 3·5 cm. long, dark magenta to reddish-purple with 5 nectar pouches at base ; lobes 5, rounded and notched, about 1·8 cm. long and broad.

Stamens : 10, 2·5 cm. long ; filaments glabrous.

Pistil : 3·5 cm. long ; ovary conoid clad with whitish tomentum ; style glabrous.

Capsule :

Habitat : South-Eastern Tibet, Pemako, at 9,000-10,000 ft.

Rh. silvaticum is closely related to *Rh. niveum*, but distinguished by its larger, more shining leaves, with indumentum composed of stouter branching hairs, and by its reddish-magenta flowers.

RHODODENDRON PERAMOENUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 56.

Illustration—

Habit : a shrub of 6-12 ft. ; young shoots clad at first with white floccose tomentum and with scattered glands, later glabrescent ; branches straight, those below inflorescences 5 mm. diameter.

Leaves : lamina very narrow, lanceolate, 7-15 cm. long, 1-2 cm. broad ; apex tapered acuminate ; base tapered and cuneate ; upper surface light green, at maturity with few vestiges of floccose juvenile tomentum and shortly stalked glands both more or less persistent in the midrib groove, primary veins about 20 on each side impressed ; under surface white or grey to fawn everywhere clad with a thinnish compact persistent indumentum somewhat agglutinate at the surface, composed of interlaced branched hairs among which are scattered small glands, midrib prominent, glandular glabrescent, primary veins raised ; petiole 1-2 cm. long, stout, grooved above, grey tomentose and glandular.

Inflorescence : a racemose umbel of 15-20 flowers ; rhachis densely rufous tomentose.

Pedicels : 6-7 mm. long, densely tomentose and sparse glandular.

Calyx : small, about 2 mm. long, with 5 broadly triangular teeth densely tomentose.

Corolla : campanulate, 5 cm. long, bright cherry-scarlet to deep rose-crimson, fleshy, with 5 nectar pouches at base ; lobes 5, rounded, 2 cm. long, 2 cm. broad, emarginate, crenulate.

Stamens : 10, 2-4 cm. long ; filaments glabrous.

Pistil : 5 cm. long ; ovary elongate, 7-8 mm. long, grooved, densely fawn floccose ; style glabrous.

Capsule : 2 cm. long, 7-8 mm. broad, blackish, clad with vestiges of tomentum, 10-12-chambered.

Habitat : Western Yunnan ; Shweli—Salween Divide. In thickets and margins of forests at 9000-10,000 ft. altitude.

R. peramoenum is akin to *R. Delavayi*, but is distinguished by the very elongate narrow leaves, by a somewhat more compact indumentum and by the much less rugose upper surface of the leaf.

ARBOREUM SERIES

SUBSERIES ARGYROPHYLLUM

This subseries has a wide extension in China. The majority of the species are found in Szechuan. Thence it extends south and eastwards to the maritime provinces of Kwangtung and Fokien and into Formosa. One outlier (*R. Coryanum*) occurs in that part of Tibet which adjoins North-Western Yunnan. The subseries appears to be a Chinese development of the Himalayan Arboreums with certain marked divergences. The species are more of the bush-type than the typical Arboreums : their truss is much less dense with fewer flowers and the pedicels relatively much longer. The corolla is generally smaller, tends to be white or rose, rarely purple, never the deeper red of the Arboreums : the base of the corolla-tube is acute, rarely rounded, and generally lacks the conspicuous nectaries of the true Arboreums. It is evident that these characters indicate affinity to the northern subseries Caucasicum. That subseries, however, has an elongated truss and a different indumentum.

There is considerable variation in the indumentum of the subseries. The majority tend to have a thin plastered indumentum, and this, where it occurs, is a good diagnostic mark for the subseries, but with the proviso that it is also found in the Arboreum subseries, but there associated with a very different leaf texture. This plastered condition is sometimes strikingly white, and again buff or tawny. A minority show a loose woolly tomentum with the same gradation from white to tawny. The thickness of the indumentum varies from a dense felt in such species as *R. floribundum* to a thin silvery coat (seen in *R. argyrophyllum*), and from that to a very thin lustrous shining parchment in *R. insigne*. These variations in the indumental character would appear to indicate a lack of homogeneity in the subseries, but the appreciation of their other characters leaves little doubt but that we have here an assemblage of related species although the area of their distribution is a wide one.

The subseries is not conspicuously glandular except in the one species, *R. Thayerianum*, but in many there are minute glands developed on the leaf under surface, but these are concealed by the indumentum, except sometimes on the midrib, where they are usually more abundant.

ARBOREUM SERIES

SUBSERIES ARGYROPHYLLUM

KEY TO THE SPECIES

A. Leaf indumentum white to fawn, more or less plastered, never woolly:
  B. Indumentum strikingly white:
    C. Corolla 3-3·5 cm. long, white to rose, base narrow:
      D. Leaves broadly oblong; pedicel and ovary floccose and glandular . . . . . **hypoglaucum.**
      DD. Leaves narrowly oblong; pedicel and ovary floccose, eglandular . . . . . **argyrophyllum.**
    CC. Corolla 4-5 cm. long, purple, base broad . **Ririei.**
  BB. Indumentum shining, with a light coppery lustre **insigne.**
  BBB. Indumentum grey to fawn or buff, not lustrous:
    C. Ovary entirely glandular, style glandular to the tip **Thayerianum.**
    CC. Ovary glabrous, style glabrous . . **Coryanum.**
    CCC. Ovary tomentose and glandular or tomentose-eglandular:
      D. Leaf apex acute, style hairy and glandular at base **fokienense.**
      DD. Leaf apex acuminate, style glabrous . . **longipes.**
      DDD. Leaf apex more or less rounded to obtuse:
        E. Leaf narrow-oblanceolate, style glabrous **formosanum.**
        EE. Leaf obovate or oblanceolate, style base glandular **simiarum.**
AA. Leaf indumentum white to fawn, more or less woolly, not plastered:
  B. Leaves much longer than broad, apex acute to acuminate:
    C. Indumentum white, leaf base broadly cuneate **floribundum**
    CC. Indumentum tawny, leaf base broadly cuneate **denudatum**
    CCC. Indumentum white to tawny, leaf base very narrowly cuneate:
      D. Leaf under surface persistently white **Hunnewellianum.**
      DD. Leaf under surface at first white, altering to tawny **Rockii.**
  BB. Leaves little more than twice as long as broad, apex more or less rounded . . . . . **farinosum.**

RHODODENDRON ARGYROPHYLLUM, *Franch.* in *Bull. Soc. Bot. France,* vol. 33 (1886), p. 231.

Illustration—Millais, *Rhododendrons,* 2nd ser. (1924), 168.

Habit: a large shrub of 6-20 ft.; young shoots covered with a thin white to grey scurfy tomentum, becoming later glabrous; branches below inflorescences about 4 mm. in diameter.

Leaves: lamina oblong-lanceolate, 6-13 cm. long, 1·5-3 cm. broad; apex acuminate, commonly reflexed; base tapered cuneate to sub-rounded; upper surface smooth, at first light green, later darker, at maturity glabrous, midrib grooved, primary veins about 14 on each side deeply impressed; under surface clad with a thin white felty or plastered indumentum which becomes on mature leaves more or less crustaceous, midrib prominent green, almost glabrous, primary veins raised; petiole 1-1·5 cm. long, flattish above, deeply grooved, glabrescent.

Inflorescence: a loose racemose umbel of 6-10 flowers; rhachis about 1 cm. long, rufous tomentose.

Pedicels: 2·5-3·5 cm. long, slender, sparsely white floccose.

Calyx: small, 1-2 mm. long, with 5 broadly triangular teeth.

Corolla: campanulate, 3-3·5 cm. long, narrowed at base in type, broader in the variety cupulare, white or white flushed-rose, spotted within deeper pink or rose on the upper part.

Stamens: 12-14, unequal, 1·5-2·5 cm. long, shorter than corolla: filaments hairy at base.

Pistil: 3 cm. long; ovary whitish floccose; style glabrous.

Capsule: narrowly cylindric, 2-3 cm. long, 6 mm. broad, straight or slightly curved, 9-chambered.

Habitat: Western Szechuan. In thickets at 6000-8000 ft. altitude.

This species is the centre of a small subseries distinguished chiefly by the characters of the indumentum. Three varieties have been described: var. *cupulare,* Rehder & Wilson, leads in the direction of *R. hypoglaucum,* and var. *omeiense,* Rehder & Wilson, has smaller leaves than the type and a deeper-coloured tomentum. The other variety, var. *leiandrum, Hutch.* in *Bot. Mag.,* vol. 144 (1918), t. 8767, is characterised by glabrous filaments.

RHODODENDRON CORYANUM, *Tagg & Forrest* in *Notes R.B.G. Edin.*, vol. 15 (1926), 99.

Illustration—

Habit: a freely branched shrub 10-20 ft. high; young vegetative shoots about 4 mm. in diameter, clothed with a thin grey tomentum of floccose hairs and with small subsessile glands; shoots below inflorescences about 6 mm. diameter.

Leaves: lamina leathery, narrow-elliptic to oblong-oblanceolate, 7-17 cm. long, 1·8-4 cm. broad; apex acute to subacuminate; base tapered, wedge-shaped; upper surface light green, at maturity glabrous, midrib grooved, primary veins 18-20 on each side slightly impressed; under surface clad with a thin indumentum, at first olive-grey or whitish with a soft suede surface, later crustaceous, pale cinnamon or buff, more or less agglutinate, finally thinning off and becoming ash-grey, composed of short-branched hairs and very small and sparsely scattered ovoid glands; petiole about 2 cm. long, thinly tomentose and glandular with minute glands.

Inflorescence: a lax racemose umbel of 20-30 flowers; rhachis 2-3 cm. long, sparsely puberulous and floccose.

Pedicels: 3-4 cm. long, sparsely tomentose and sparsely glandular with minute glands.

Calyx: small, about 1-2 mm. long; lobes 5, small, ovate to triangular, sparsely clad with floccose hairs and small glands.

Corolla: funnel-campanulate, 2·5-3 cm. long, creamy-white marked within with brownish-crimson spots, puberulous inside; lobes 5, rounded, about 1·5 cm. long, and broad.

Stamens: 10-12, unequal, 1·4-2·4 cm. long; filaments puberulous over the lower 5 mm. of their length.

Pistil: 2·5-3 cm. long; ovary conoid, 5-6 mm. long, glabrous or with a few hairs; style glabrous, slender.

Capsule: oblong, more or less curved, about 2 cm. long, 5 mm. broad, blackish, ribbed, 6-chambered.

Habitat: South-Eastern Tibet; Salween—Kiu chiang Divide. In rhododendron thickets and mixed forests at 12,000-14,000 ft. altitude.

Geographically this species is an outlier in this subseries, as it comes from the Tibetan borders. It is readily distinguished by the glabrous ovary. In number of flowers on the truss it probably exceeds any of its allies.

RHODODENDRON DENUDATUM, *Lévl.* in *Fedde Repert.*, vol. 13 (1914), 339.

(R. XANTHONEURON, *Lévl.*)

ILLUSTRATION—

HABIT: a large shrub about 12 ft. high; young shoots white floccose, hairs stellate.

LEAVES: lamina coriaceous, lanceolate to oblong-elliptic, 10-15 cm. long, 3·5-5 cm. broad; apex acuminate; base cuneate; upper surface glabrous at maturity, midrib deeply impressed, primary veins 14-18 on each side impressed; under surface clad with a woolly fawn tomentum, midrib very prominent, practically glabrous, primary veins prominent; petiole 1-2 cm. long, slightly tomentose.

INFLORESCENCE: a corymbose umbel of 9-12 flowers; rhachis 5-7 mm. long, floccose.

PEDICELS: about 1 cm. long, densely greyish tomentose.

CALYX: 5 minute triangular teeth, densely tomentose, about 1 mm. long.

COROLLA: campanulate, 3-3·5 cm. long, rose with deep crimson blotch at base, also spotted; lobes 5-6, rounded, 1·5 cm. long, 1-1·5 cm. broad.

STAMENS: 10-13, 2-3 cm. long; filaments clad with a few scattered hairs at base.

PISTIL: about same length as corolla, 3-3·5 cm. long; ovary conoid, 4-5 mm. long, ribbed, densely greyish tomentose with silky unicellular hairs, 7-8-chambered.

CAPSULE:

HABITAT: Eastern Yunnan; Tien-Sin. At 9000-10,000 ft. altitude.

A little known species from Eastern Yunnan which closely approaches *R. floribundum*, differing in the larger leaves with glossier upper surface and tawny indumentum below. *R. xanthoneuron* is the same.

RHODODENDRON FARINOSUM, *Lévl.* in *Fedde Repert.*, vol. 13 (1914), 340.

Illustration—

Habit : a shrub 4-6 ft. high ; branches at first clad with a thin grey tomentum, later glabrescent, those below inflorescences about 7 mm. diameter.

Leaves : lamina oblong-elliptic to obovate, 5-8 cm. long, 2-3 cm. broad ; apex obtuse to rounded, mucronulate ; base obtuse to semi-rounded ; upper surface bullate and markedly rugulose, shining, glabrous at maturity, midrib deeply grooved, primary veins 10-12 on each side deeply impressed ; under surface, midrib and veins included, clad with a white to fawn tomentum loosely woolly on young leaves, more compact and semi-agglutinate on older leaves, midrib prominent, at first clothed with indumentum, later glabrescent, primary veins at first more or less obscured by tomentum, more evident on older leaves ; petiole about 1 cm. long, stout, clad with a thin whitish tomentum.

Inflorescence : an umbel of about 6 flowers ; rhachis short, 5 mm. long.

Pedicels : 1-1·5 cm. long, densely clad with whitish to tawny tomentum.

Calyx : short, 5-toothed, teeth triangular, rufous-tomentose.

Corolla : campanulate, 3-3·5 cm. long, white, glabrous outside, slightly puberulous inside ; lobes 5, unequal, about 1 cm. long, 1·5-2 cm. broad, rounded, notched.

Stamens : 10, 1·5-2·5 cm. long ; filaments puberulous at base.

Pistil : 3 cm. long ; ovary oblong-cylindric, truncate, 5-7 mm. long, grooved, densely fawn to rufous tomentose with fasciately branched hairs ; style glabrous.

Capsule :

Habitat : Yunnan ; Io-chan. At 9000-10,000 ft. altitude.

A little known species from Eastern Yunnan closely related to *R. floribundum* and *R. denudatum* but differing in the small leaves, broad for their length, and with an obtuse to rounded apex.

RHODODENDRON FLORIBUNDUM, *Franch.* in *Bull. Soc. Bot. France*, vol. 33 (1886), 232.

ILLUSTRATION—

HABIT: a tall pyramidal shrub or small tree of about 9-15 ft.; one-year-old shoots about 5 mm. diameter, hoary, with a floccose tomentum of stellate hairs; branches below inflorescences about 5 mm. diameter.

LEAVES: lamina leathery, lanceolate, convex above, 7-15 cm. long, 3-5 cm. broad; apex apiculate; base broadly cuneate; upper surface bullate, at first hoary with scattered stellate hairs, later glabrous, midrib deeply grooved, primary veins 12-18 on each side deeply impressed; under surface clad with a persistent white tomentum of long-branched hairs which give to the indumentum surface a loosely felted appearance, midrib prominently raised, more or less clad with indumentum, primary veins prominent; petiole 1 cm. long, at first clad with indumentum like the shoots, later glabrescent.

INFLORESCENCE: a racemose umbel of 8-12 flowers; rhachis, about 7 mm. long, white floccose with stellate hairs.

PEDICELS: 1 cm. long, white tomentose.

CALYX: cup tomentose; lobes 5, narrow-triangular, acute, about 2 mm. long, more or less floccose.

COROLLA: widely campanulate, 4 cm. long, at first magenta-rose, becoming paler with prominent dark crimson blotch at base which breaks into numerous spots on the back petal; lobes 5, rounded, 1·5 cm. long, 1·5-2 cm. broad.

STAMENS: 10, 2-3·5 cm. long; filaments glabrous or slightly puberulous.

PISTIL: about 4 cm. long; ovary oblong, blunt, 5 mm. long, densely clad with a white velvety covering of silky unbranched adpressed hairs, 8-10-chambered; style glabrous or slightly hairy at the base.

CAPSULE: stout, cylindric, straight or curved upwards, 2-3 cm. long, 1 cm. broad, 8-10-celled, sparsely clothed with short yellowish-grey pubescence.

HABITAT: Western Szechuan; Mupin. In woods at 4000-8000 ft. altitude.

This and its four allies (*R. denudatum*, *R. farinosum*, *R. Hunnewellianum* and *R. Rockii*) are distinguished from the other members of the subseries by the loose woolly nature of the indumentum. In this species the petioles and young stems are conspicuously clothed with a thin covering of white stellate hairs.

RHODODENDRON FOKIENENSE, *Franch.* in *Bull. Soc. Bot. France*, vol. 44 (1899), 210.

Illustration—

Habit : a shrub with thin glabrous branches, thinly pubescent when young, winter buds ovate, long acuminate, ciliolate.

Leaves : lamina lanceolate or oblong-lanceolate, 5-9 cm. long, 1·5-2·5 cm. broad ; apex acute ; base tapered, cuneate ; upper surface glabrous at maturity or with vestiges of a white tomentum in the groove of the midrib, dark green, primary veins 11-13 on each side slightly impressed ; under surface clad with a thin crustaceous white to grey indumentum, midrib prominent, almost glabrous, primary veins obscured or slightly elevated ; petiole 1-2 cm. long, thin.

Inflorescence : a racemose umbel of 4-5 flowers.

Pedicels : slender, 2 cm. long, thinly floccose and sparsely glandular, with small glands.

Calyx : small, with 5 obscure broadly triangular teeth more or less glandular.

Corolla : funnel-campanulate, 3·5-4 cm. long, puberulous within ; lobes 5, rounded, crenulate, 1 cm. long, 1·5 cm. broad.

Stamens : 10, 1·5-2·7 cm. long ; filaments densely pubescent below the middle.

Pistil : about 3·5 cm. long ; ovary clad with short branched hairs which conceal small scattered glands ; style hairy and glandular at the base.

Capsule :

Habitat : Eastern China ; Province of Fokien.

An imperfectly known species akin to *R. longipes*.

RHODODENDRON FORMOSANUM, *Hemsl.* in *Kew Bull.* (1895), 183.

Illustration—

Habit : a bush 6-18 ft. high ; branches rigid, when young clad with a grey scurfy tomentum, soon glabrescent ; leaves crowded at end of each annual growth.

Leaves : lamina thick, leathery, narrowly oblanceolate to narrowly lanceolate, 7-13 cm. long, 1·5-2·5 cm. broad ; apex obtuse, tapered from the broadest part to a narrow cuneate base ; upper surface of unfolding leaves floccose, more or less glandular, soon becoming glabrescent, at maturity glossy, glabrous, midrib grooved, primary veins about 14 on each side impressed ; under surface clad with a pale grey to fawn crustaceous indumentum, midrib prominent, primary veins inconspicuous ; petiole 1-2 cm. long, at first thinly floccose, soon glabrescent.

Inflorescence : a rounded corymb of 10-20 flowers ; rhachis 1·5-2 cm. long.

Pedicels : 1-3 cm. long, clothed with a rufous brown pubescence.

Calyx : annular, pubescent, with 5 minute broad-rounded or triangular teeth.

Corolla : wide funnel-shaped, 3-4 cm. long, white or pink, spotted with purple-brown dots, glabrous inside and out ; lobes 5, 1·5 cm. long, rounded, emarginate.

Stamens : 10-12, unequal, 2·5-3 cm. long ; filaments flattened and hairy at base.

Pistil : 3-4 cm. long ; ovary ovoid, 4 mm. long, densely clothed with a floccose grey-brown pubescence, 5-chambered ; style glabrous.

Capsule :

Habitat : Formosa. Mountains at 4000-6000 ft. altitude.

This is a little known species, nearest probably to *R. simiarum* but differing in its narrower leaves and in its glabrous style.

RHODODENDRON HUNNEWELLIANUM, *Rehd. & Wils.* in *Pl. Wils.*, vol. 1 (1913), 535.

(R. LEUCOLASIUM, *Diels.*)

ILLUSTRATION—

HABIT: a shrub 6-16 ft. high; branchlets at first greyish-floccose, becoming at length glabrescent.

LEAVES: lamina narrow-oblanceolate or rarely narrow-lanceolate, 7-15 cm. long, 1·5-2·5 cm. broad; apex acuminate; base tapered, wedge-shaped; upper surface light green, at maturity glabrous, slightly rugulose, midrib deeply grooved, primary veins 12-16 on each side impressed (upper surface of unfolding leaves punctate with minute glands); under-surface clad with a white or greyish floccose bistrate indumentum, the upper layer forming a loose thin woolly surface, midrib prominent, almost glabrous except for small scattered glands, primary veins slightly raised but not conspicuous; petiole 1-1·5 cm. long, at first thinly floccose and glandular, becoming almost glabrous.

INFLORESCENCE: a racemose umbel of about 7 flowers; rhachis about 1 cm. long, whitish-pubescent.

PEDICELS: 1·5-2 cm. long, clothed with white hairs and small red glands.

CALYX: small, about 2 mm. long; lobes broadly rounded clad with white hairs and small glands.

COROLLA: widely campanulate, 4-5 cm. long, white tinted pink, deeper in bud, pink-spotted inside on the back, densely puberulous within over the lower part; lobes 5, unequal, oval, rounded at apex, 2 cm. long, 2 cm. broad.

STAMENS: 10, unequal, 2·5-4 cm. long; filaments white, puberulous at base.

PISTIL: 4-5 cm. long; ovary conoid, about 7 mm. long, densely whitish tomentose; style glabrous except for a few hairs and sometimes glands at the base, white, tinted pink below the deep-pink stigma.

CAPSULE: cylindric, 2-2·5 cm. long, 8-10 mm. broad, 8-chambered, more or less clad with tawny tomentum.

HABITAT: Western Szechuan. In woods and thickets at 6000-10,000 ft. altitude.

A species well distinguished in the subseries by the very narrow leaves, much attenuated at apex and base and coated below with a thin white woolly indumentum. A species with which it may be confused is *R. Rockii*, where the indumentum changes from white to a tawny tint.

RHODODENDRON HYPOGLAUCUM, *Hemsley*. (Copy of figure in *Bot. Mag.*, t. 8649.)

A. Flowering shoot (about $\frac{2}{3}$ natural size). B. Section of ovary (enlarged). C. Apex of leaf showing under surface. D. Pistil. E. Stamens (slightly enlarged).

RHODODENDRON HYPOGLAUCUM, *Hemsl.* in *Journ. Linn. Soc.* (*Bot.*), vol. 26 (1889), 25.

(R. GRACILIPES, *Franch.* ; R. CHIONOPHYLLUM, *Diels.*)

ILLUSTRATION—*Bot. Mag.*, vol. 142 (1916), t. 8649.

HABIT : a shrub or small tree sometimes as much as 20 ft. high ; young shoots at first sparsely floccose, later glabrous ; shoots below inflorescences about 4 mm. diameter.

LEAVES : lamina oblong-elliptic, oblong-lanceolate or oblanceolate, 6-11 cm. long, 2-4 cm. broad ; apex triangular-acuminate, deflexed with a stiff mucro ; base narrowed obtuse to semi-rounded ; upper surface smooth bright green, glossy, glabrous at maturity, midrib slightly impressed, primary veins 12-14 on each side slightly impressed ; under surface clad with a thin smooth white tomentum except on the raised midrib, which is almost glabrous, primary veins slightly raised, clad with indumentum ; petiole 1-1·5 cm. long, rounded, slightly grooved above, at first slightly floccose like the young stem, later glabrous.

INFLORESCENCE : a racemose umbel of 4-7 flowers ; rhachis about 1·5 cm. long, sparsely pubescent.

PEDICELS : about 2·5 cm. long, whitish-floccose and more or less glandular.

CALYX : small, about 2 mm. long ; lobes 5, minute, broadly triangular, floccose and gland-ciliate with small glands.

COROLLA : funnel-campanulate, about 3·5 cm. long, white flushed rose outside, with numerous deep-rose spots within on the back spreading to the base of the lobes, puberulous within at the base ; lobes 5, more or less erect, about 1 cm. long, 1·5 cm. broad.

STAMENS : 10-12, unequal, 1·7-3 cm. long ; filaments flattened towards the base and there densely puberulous.

PISTIL : about 3·5 cm. long ; ovary 7 mm. long, grooved, floccose and glandular, narrow-conoid ; style glabrous or glandular at the base.

CAPSULE : oblong cylindric, 1-1·5 cm. long, 3-4 mm. broad, curved, furrowed, slightly verruculose, 5-6-chambered.

HABITAT : Eastern China ; Hupeh. In woods at 5000-7000 ft. altitude.

A species closely linked with *R. argyrophyllum*, with the same plastered whitish indumentum but with usually a glandular ovary. The leaves are relatively broader in proportion to length.

RHODODENDRON INSIGNE, *Hemsl. & Wils.* in *Kew Bull.* (1910), 113.

Illustrations—*Gard. Chron.*, 3rd ser., vol. 73 (1923), 351, fig. 168; Millais, *Rhododendrons*, 2nd ser. (1924), 202.

Habit: a bush of 5-12 ft.; branches thick, straight; one-year-old vegetative shoots 7 mm. diameter, ashy-grey with a thin tomentum, two and three-year-old shoots, green glabrescent.

Leaves: lamina leathery, oblong-lanceolate or oblong-oblanceolate, 7-13 cm. long, 2-4·5 cm. broad; apex shortly acuminate, cuspidate; base cuneate; margins slightly reflexed; upper surface dark green, glabrous, midrib deeply grooved, primary veins 14-16 on each side impressed; under surface at maturity clad with a shining tawny-grey skin-like indumentum often with a coppery sheen, midrib green glabrous or nearly so, prominently raised, primary veins raised; unfolding leaves light green, and glabrous above, white woolly below; petiole 1·5-2 cm. long, thick, flattish above and grooved, at first white woolly, later greenish-grey glabrescent.

Inflorescence: a short lax corymb of 8 or more flowers.

Pedicels: 2-4 cm. long, reddish, sparsely floccose, at first erect, later spreading.

Calyx: very small, cupular, with 5 broad triangular teeth about 1 mm. long, floccose on the back.

Corolla: widely campanulate, 4 cm. long, pale or deeper pink, suffused rose on the median lines of the petals, crimson spotted inside on back; lobes 5, rounded, emarginate, 1·5 cm. long, 2 cm. broad.

Stamens: 10-14, 1·7-2·5 cm. long; filaments densely hairy over lower half.

Pistil: 3·5 cm. long; ovary 7 mm. long, densely clad with a white smooth pubescence of long silky hairs; style stout, glabrous, widened towards the discoid stigma.

Capsule: stout, cylindric, obtuse, 2·5 cm. long, about 1 cm. wide, 8-10-chambered, densely clad with short brownish crispate hairs.

Habitat: Szechuan; Wa-shan. Woodlands, at 7000-10,000 ft. altitude.

In the subseries the species is readily marked out by the shining indumentum which has a light coppery sheen. The nearest ally appears to be *R. Thayerianum*, a very glandular species, whereas *R. insigne* is free from glands.

RHODODENDRON LONGIPES, *Rehd. & Wils.* in *Pl. Wilsonianae*, vol. 1 (1913), 528.

Illustration—

Habit : a shrub 3-8 ft. high ; branches somewhat slender ; young shoots at first thinly pubescent, finally glabrous ; branches below inflorescences about 4 mm. diameter.

Leaves : lamina thinly leathery, oblong-lanceolate or oblong-oblanceolate, 8-13 cm. long, 2-3·5 cm. broad , apex acuminate ; base tapered, cuneate or broadly cuneate ; upper surface smooth, light green, glabrous, midrib grooved, primary veins 10-14 on each side slightly impressed ; under surface clad with a thin pale brown somewhat crustaceous indumentum, among the hairs of which are minute glands sparsely scattered but more numerous near the midrib and lining the sides of the latter, midrib prominent, almost bare, primary veins slightly raised or obscure ; petiole 1-1·5 cm. long, glabrescent, slightly grooved above.

Inflorescence : a rounded umbel of 10-15 flowers ; rhachis 2-2·5 cm. long, sparsely hairy.

Pedicels : slender, 4-4·5 cm. long, sparsely glandular with minute glands and sparsely floccose.

Calyx : minute, with small unequal lobes, about 1 mm. long, acute or rounded, glabrous or sparsely floccose.

Corolla : funnel-campanulate, about 3·5 cm. long, 4 cm. broad, pale rose spotted a deeper tint ; lobes 5, unequal, about 1 cm. long, 1·5-2 cm. broad, rounded, rarely emarginate.

Stamens : about 12, 1-1·5 cm. long ; filaments glabrous.

Pistil : 2-3 cm. long ; ovary 6 mm. long, narrow cylindric, rufous tomentose ; style extending to a little beyond the base of corolla lobes, glabrous.

Capsule :

Habitat : western Szechuan. In thickets at 6000-7000 ft. altitude.

In the character of its leaves apart from indumentum, this species recalls *R. Hunnewellianum*. The leaves have the same attenuated apex and base. The nearest ally is possibly *R. fokienense*.

RHODODENDRON RIRIEI, *Hemsl. & Wils.* in *Kew Bull.* (1910), 111.

Illustration—

Habit: a bush of about 18 ft.; branches long and straight; shoots below inflorescences about 4 mm. diameter; young shoots greenish, clad with a thin whitish tomentum; leaves below the inflorescences fairly closely set in whorls and standing out horizontally.

Leaves: lamina oblong-elliptic, lanceolate or oblong-lanceolate, 7-15 cm. long, 2·7-5 cm. broad; apex obtuse or shortly acuminate, somewhat cuspidate; base cuneate or narrowly rounded; upper surface bright green, mat, glabrous, with minute traces of juvenile tomentum, midrib grooved, primary veins 13-14 on each side just showing; under surface silvery white or grey-green clad with a thin skin-like indumentum, or at times almost glabrous and then pale green, midrib prominent greenish, primary veins slightly raised near midrib, in typical forms clad with indumentum; petiole 1-2 cm. long, stout, grooved above, glabrous or thinly clad with indumentum like the young shoots, sometimes purplish.

Inflorescence: a corymbose raceme of about 10 flowers; rhachis about 5 mm. long, whitish floccose, bud-scales and bracts more or less persistent during flowering period.

Pedicels: stout, about 1 cm. long, clothed with a thin white cobweb tomentum.

Calyx: about 5 mm. long, a pink ring with 5 unequal triangular or oblong lobes, sparsely pubescent.

Corolla: campanulate, 4-5 cm. long, purplish, with 5 black-purple nectar pouches at the base of the tube; lobes 5 or 7, rounded, emarginate, crenulate, 2 cm. long, 2-2·5 cm. broad.

Stamens: 10, unequal, 2·5-4 cm. long; filaments magenta at base, glabrous or slightly pubescent at base; anthers brown to black.

Pistil: 3·5-4·5 cm. long; ovary conoid, 5 mm. long, clothed with a dense grey felty tomentum; style reddish towards base, glabrous, slightly swollen below the greenish capitate stigma.

Capsule: oblong-cylindric, almost straight, about 3 cm. long, 1 cm. broad, greyish, with withered tomentum, 10-chambered.

Habitat: Szechuan; Mount Omei.

The nearest allies as regards foliage characters are *R. hypoglaucum* and *R. argyrophyllum*, but a ready mark of distinction is the large purple corolla with broad base to the tube. The pedicels are short and the corolla large for the subseries. The degree of development of the thin whitish indumentum varies in different forms.

RHODODENDRON ROCKII, *Wilson* in *Journ. Arn. Arb.*, vol. 9 (1928), 103.

Illustration—

Habit : a shrub or small tree 12-18 ft., bark pale grey ; young shoots thinly whitish floccose ; branches below inflorescences about 4 mm. diameter.

Leaves : lamina oblong-lanceolate to oblong-oblanceolate, 6-12 cm. long (usually 8-10), 1-2 cm. broad (usually 1·5-2) ; apex shortly acuminate ; base attenuate or cuneate ; upper surface deep green, midrib impressed, primary veins impressed 12-15 on each side ; under-surface clad with a grey to tawny floccose tomentum which covers a white crustaceous under stratum, midrib elevated, primary veins rather obscure ; petiole stout, 8 mm.-1·8 cm. long, grooved above.

Inflorescence : a racemose umbel of 6-12 flowers ; rhachis 3-4 mm. long, tawny floccose.

Pedicels : slender, 1-1·5 cm. long, clad with a pale or rufous crisp floccose tomentum.

Calyx : ring-like, with 5 minute triangular teeth, more or less floccose or glabrescent.

Corolla : funnel-campanulate, 3-4 cm. long, 4-5 cm. broad, pale rose or pinkish-purple, spotted, puberulous within at the base ; lobes 5, rounded, or at times truncate, emarginate, 1-1·5 cm. long, 1·5-2 cm. broad.

Stamens : 10, unequal, 1·5-3·5 cm. long ; filaments below the middle puberulous ; anthers oblong, brownish.

Pistil : exceeding stamens, about 3·5 cm. long ; ovary conical, 5 mm. long, grooved, covered with a dense grevish or buff-brown tomentum ; style almost straight, thickened below the capitate stigma.

Capsule : not seen.

Habitat : southern Kansu. On slopes beyond the Szechuan border in rain forests at 6000-7000 ft. altitude.

A close ally of *R. Hunnewellianum* and very like it in foliage. But whereas the leaves in *R. Hunnewellianum* remain white below, those of *R. Rockii* gradually change to tawny. They come from different provinces.

RHODODENDRON SIMIARUM, *Hance* in *Journ. Bot.*, vol. 22 (1884), 22.

(R. Fordii, *Hemsl.* in *Kew Bull.* (1894), 5.)

Illustration—*Bot. Mag.*, vol. 132 (1906), t. 8111 (under *R. Fordii*).

Habit : a bush of about 6-8 ft. ; branches stout, when young clothed with grey floccose tomentum, finally glabrescent.

Leaves : clustered at branch tips ; lamina thick, leathery, oblanceolate to obovate or oblong-lanceolate, 4-9 cm. long, 2-3 cm. broad ; apex obtuse or rounded ; base cuneate, narrowed to petiole ; upper surface at first clad with floccose, grey tomentum, later glabrescent, midrib impressed, primary veins 8-10 on each side slightly impressed ; under surface clad with a greyish to fawn or buff crustaceous indumentum, midrib prominent, thinly clad with tomentum and scattered glands, which may occur also sparingly on adjacent parts of the under surface, primary veins not prominent ; petiole 1-1·5 cm. long, at first thinly floccose and glandular, later glabrescent, round, hardly grooved.

Inflorescence : a racemose corymb of 4-6 flowers with almost erect pedicels surrounded by glandular bud-scales ; rhachis 1-2 cm. long.

Pedicels : 2-3 cm. long, sparsely or densely whitish or rusty floccose.

Calyx : discoid, with 5 small triangular acute glandular and gland-fringed teeth.

Corolla : funnel-campanulate, about 4 cm. long, pink, pale within, with few rose-pink dots ; lobes 5, spreading, rounded, emarginate.

Stamens : 10-12, unequal, about 2-3 cm. long ; filaments sparsely hairy in lower half ; anthers yellow.

Pistil : about 4 cm. long ; ovary 5 mm. long, ovoid, clad with stellately branched hairs mixed with glands, 5-chambered ; style curving, glandular at base ; stigma capitate.

Capsule : ovoid, woody, about 1 cm. long, often rufous pubescent, borne on erect stout stalks.

Habitat : south-eastern China ; Kwangtung Province. At about 3200 ft. altitude.

This is in cultivation under the name *R. Fordii*. Among the species of this subseries characterised by a plastered buff indumentum, *R. simiarum* is easily distinguished by the obovate or oblanceolate leaves, with an obtuse to rounded apex, and by the glands at the base of the style.

RHODODENDRON THAYERIANUM, *Rehd. & Wils.* in *Pl. Wilsonianae,* vol. 1 (1913), 529.

Illustration—*Bot. Mag.*, vol. 149 (1923), t. 8983.

Habit: a shrub 9-13 ft. high, with stoutish thick branches; the foliage crowded, closely clustered around flower truss; bud-scales persisting among the leaves for several years.

Leaves: lamina thick, leathery, narrow oblanceolate, 7-13 cm. long, 1·5-3 cm. broad; apex acute to acuminate, slightly recurved; base cuneate; margin recurved; upper surface light green, at times mottled, at maturity glabrous, midrib deeply grooved, primary veins 10-12 on each side impressed; under surface except midrib clad with a smooth crustaceous skin-like pale brown indumentum, midrib prominently raised forming a keel to the lamina, glandular and sparsely floccose, primary veins obscure; petiole stout, curved, at first sparsely glandular and sparsely floccose, ultimately glabrous.

Inflorescence: a compact racemose corymb of 10-20 flowers; rhachis elongate, thin, 3-4 cm. long, glandular, with short-stalked glands.

Pedicels: 4-5 cm. long, slender, densely glandular.

Calyx: small, 2-4 mm. long; lobes distinct, 5, unequal, oblong or rounded, densely glandular.

Corolla: funnel-campanulate, 2·5-3 cm. long, white tinged pink or deeply flushed on the outside along the petal ridges, without spots or blotch; lobes 5, 1·3 cm. long, 1·5 cm. broad, orbicular.

Stamens: 10, unequal, 1·3-2 cm. long; filaments white widened at base, hairy over the lower half of length; anthers light brown.

Pistil: about 2·5 cm. long; ovary oblong, 5 mm. long, densely clothed with translucent whitish glands; style whitish clad to the tip with glands.

Capsule: oblong, cylindric, about 2 cm. long, 4-6 mm. broad, greenish-grey, encrusted with blackish shrivelled glands, 6-8-chambered.

Habitat: western Szechuan; Mupin. In woodlands at 9000 ft. altitude.

This is a very distinct species in its subseries by reason of the free development of glands. It is the only one in which the style is glandular to the tip. The persistence of the perulae on the stem for several years is also noteworthy.

AURICULATUM SERIES

This small series contains but two species, *R. auriculatum* and *R. Griersonianum*. They are not very closely allied to one another and occupy quite different areas. They have nevertheless much in common and show no near approach to any other species. The first is confined to the Province of Hupeh, while the second is found only in South-Western Yunnan, on the Shweli—Salween Divide, approaching the Burmese frontier.

The chief characteristics of the series are: the more or less lanceolate or oblanceolate leaf, the prevalence of gland-tipped strigose hairs on the shoots and petioles, these persisting on the leaf in *R. auriculatum* but replaced by a soft pad of indumentum on the under surface in *R. Griersonianum*, the long pointed foliage bud, the outer scales narrow and long pointed, the peculiar shape of the corolla, which has a long narrow tube below and an abundance of glandular or floccose hairs on the outside of the corolla. The flower in *R. auriculatum* is usually 7-lobed, but in its ally it is normally 5-lobed.

The long pointed buds are very characteristic. Not only are the buds of the two species alike in shape and in their long scales, but in both species the flower-buds are remarkably like the foliage buds. It is true that the flower-buds are somewhat larger and thicker than the foliage buds, but they are not different in shape as is frequently the case in members of the genus. This would seem to support the correctness of associating the two species as a small but distinct series.

The series is distinguished from Fortunei and other series with glabrous foliage by the glandular or woolly tomentum as well as by the characters of the bud and corolla shape. The connection with the series Barbatum is perhaps closer if foliage and glandular indumentum are compared, but there are wide differences in the inflorescence, the shape of the flower and the coating of hairs on the outside of the corolla. *R. Griersonianum* may invite comparison with such members of the Taliense series as *R. adenogynum*, but this is only as regards foliage, for they differ widely in the flowers.

KEY TO THE SPECIES

A. Leaf at both ends blunt. Indumentum sparse and glandular. Flower 7-partite . . . . . **auriculatum.**

AA. Leaf at both ends narrowed. Indumentum dense and woolly. Flower 5-partite . . . **Griersonianum.**

H. F. T.

RHODODENDRON AURICULATUM, *Hemsl.* in *Journ. Linn. Soc.* (*Bot.*), vol. 26 (1889), 20.

Illustration—*Bot. Mag.*, vol. 145 (1919), t. 8786.

Habit: a shrub or small tree 6-12 ft. high, as much as 20 ft. in the wild state with stout branches; young shoots clad with long-stalked glands; branches below inflorescences 7-10 mm. broad; terminal foliage-buds long conical, the outer scales acuminate with long tips; flowers and young growth in July—early August.

Leaves: lamina oblong, oblong-lanceolate, oblong-oblanceolate, 15-30 cm. long, 6-10 cm. broad; apex broadly obtuse to rounded; base rounded, auricled; margin softly gland-ciliate; upper surface dark green, glabrescent, midrib grooved, primary veins about 24 on each side deeply impressed; under surface pale green, clad all over with a tomentum of isolated flexuous thread-like hairs many of which are gland-tipped, midrib very prominent, pale green, clad with long soft thread-like glands, primary veins prominently raised except towards the leaf margin; petiole stout, rounded, hardly grooved, clad with long-stalked glands.

Inflorescence: a large loose umbellate raceme of 7-15 flowers; rhachis stout, 3-5 cm. long, densely glandular.

Pedicels: 2·5-3·5 cm. long, densely clad with long-stalked glands.

Calyx: small, 2-3 mm. long, discoid, rim undulate with rounded, somewhat membranous glandular lobes.

Corolla: funnel-shaped, white or rose-pink splashed greenish at the base of the tube inside, 6-10 cm. long, outside glandular with long-stalked glands; lobes 7, rounded to ovate, 2-2·5 cm. long, 2·5-3 cm. broad.

Stamens: 14, unequal, 4-6 cm. long; filaments slender, glabrous.

Pistil: 7-8 cm. long; ovary conoid, about 7 mm. long, densely glandular with short-stalked glands; style stout, glandular throughout; stigma large, knob-like.

Capsule: oblong, 3·5 cm. long, 1 cm. broad, purplish, distinctly ribbed, 8-chambered.

Habitat: western Hupeh. In woods at 5000-7000 ft. altitude.

This is an uncommon species in its native province of Hupeh but is well known in cultivation. It is remarkable for its late period of growth and flowering.

RHODODENDRON GRIERSONIANUM, *Balf. f. & Forrest.*

A. Flowering shoot (about ⅔ natural size). B. Pistil and stamens (about ⅔ natural size). C. Section of ovary (enlarged). D. Foliage and foliage-bud (about ⅔ natural size).

RHODODENDRON GRIERSONIANUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 69.

ILLUSTRATIONS—*Revue Hort.* (1928), Jan., No. 1, p. 16 ; Millais, *Rhododendrons*, 2nd ser. (1924), 150.

HABIT : a shrub of 5-10 ft. with straight branches ; young shoots clad with setose glands and floccose hairs, older branches glabrescent ; shoots below inflorescences about 1 cm. diameter ; terminal foliage-bud long, tapered, conical, the outer scales with long tapering tips.

LEAVES : lamina elongated, lanceolate, 9-20 cm. long, 2·5-5 cm. broad ; apex acute ; base obtuse ; upper surface dull green, mat, at maturity glabrous or glabrescent with vestiges of a juvenile tomentum, midrib grooved, towards base more or less clad with glandular setae, primary veins 12-18 on each side deeply impressed ; under surface clad with a loose whitish to buff woolly tomentum, midrib prominent, tomentose and glandular, primary veins raised ; petiole 2-3 cm. long, often purplish, clad with floccose hairs and long setose glands.

INFLORESCENCE : an open racemose corymb of 5-12 flowers ; rhachis 2-4 cm. long, densely tomentose and setose-glandular.

PEDICELS : 3-4 cm. long, tomentose and setose-glandular.

CALYX : small, 2-3 mm. long, with ovate or triangular lobes, densely tomentose and setose-glandular.

COROLLA : funnel-campanulate, 6-8 cm. long, 8-10 cm. across, bright geranium scarlet dappled within on posterior side with darker coloured spots, sprinkled outside with mealy floccose hairs, inside puberulous ; tube cylindric furrowed, hardly widened for about one-third length of corolla ; lobes 5, rounded, about 2 cm. long, 2·5 cm. broad.

STAMENS : 10, unequal, 3·5-5·5 cm. long ; filaments bright red, puberulous over lower two-thirds of length.

PISTIL : 5·5-7 cm. long, oblique to pedicel ; ovary conoid, 6 mm. long, densely clad with whitish branched hairs and fewer stalked glands ; style deep red, floccose and glandular at the base ; stigma small, lobulate.

CAPSULE : cylindric, almost straight, 3 cm. long, 8 mm. broad, distinctly ribbed, more or less brownish tomentose, 5-6-chambered.

HABITAT : western Yunnan ; Shweli—Salween Divide. In thickets and open situations in forests at 7000-9000 ft. altitude.

A peculiar Yunnan species with no close ally in its own province and a remote one in the Hupeh species *R. auriculatum*. The colour of the flower is difficult to define and quite unlike that of any other rhododendron.

AZALEA SERIES

(Syn.: AZALEA, *L.*, in part; ANTHODENDRON, *Reichenb.*; R. a. ANTHODENDRON, *Endl.*; R. subgen. AZALEA, *Planch.*)

GENERAL DESCRIPTION :—Shrubs, usually medium-sized and upright, sometimes small trees, with deciduous, half-evergreen or evergreen leaves, usually more or less strigose or villous-pubescent, sometimes glabrous, never scaly. Winter-buds with about 6 to many scales. Flowers from a terminal bud solitary to many in umbel-like racemes. Calyx usually small. Corolla medium-sized, rarely small, funnelform to rotate, rarely campanulate, usually with a distinct tube, 5-lobed, very rarely 4-lobed, rarely 2-lipped and the lower lip divided nearly to the base. Stamens 5-10, of equal or unequal length. Ovary 5-celled, usually strigose or pubescent, often glandular, rarely glabrous, never scaly. Capsule ovoid to cylindric-oblong.

DISTRIBUTION :—About 65 species mainly in the temperate regions of the northern hemisphere, with two large areas of distributions, one in eastern Asia from Japan and northern Korea to south-western Annam, China and the Philippines; the other in North America from Labrador to Florida and eastern Texas, and in California; besides an isolated species in the Black Sea region; absent from the Himalayas and the regions south.

A large and distinct series chiefly characterised by the usually deciduous leaves, the absence of scales and the frequent presence of strigose hairs, the terminal inflorescence and by the flowers having 5-10 stamens. Most nearly related to the Stamineum, Ovatum and Albiflorum series, which differ in their axillary inflorescence. The only other series containing deciduous-leaved species are the Dauricum and Triflorum series, which are easily distinguished by the presence of scales on the leaves and on other parts of the plant.

A. R.

AZALEA SERIES

KEY TO THE SUBSERIES

A. Flowers and leafy branchlets from the same terminal bud; flowers 1-3, rarely more, never yellow nor with yellow blotch; corolla glabrous outside, very rarely its tube setose:

B. Leaves scattered on the branchlets, persistent, or deciduous and only a few small ones persisting below the terminal bud, more or less strigose; branchlets with appressed flattened mostly brown hairs, or with flattened and pilose hairs. . . . . **Obtusum.**

BB. Leaves in whorls of 2-5 at end of the branchlets, scattered only on vigorous shoots:

C. Leaves persistent, in whorls of 2-3; branchlets with few appressed flattened hairs, sometimes nearly glabrous; corolla campanulate; stamens 10, rarely 12 **Tashiroi.**

CC. Leaves deciduous, in whorls of 2-5; branchlets glabrous or villous; corolla rotate-funnelform; stamens 5-10 **Schlippenbachii.**

AA. Flowers from terminal buds, usually several to many, the branchlets from separate lateral buds below:

B. Corolla rotate-campanulate or tubular-campanulate, glabrous outside, never yellow, nor blotched yellow:

C. Corolla rotate-campanulate, deeply lobed, the lower lobes sometimes divided nearly to the base; stamens 10, sometimes 5-7, exserted . . . . . **Canadense.**

CC. Corolla tubular-campanulate, with short, slightly spreading lobes, white; stamens 10, included **Nipponicum.**

BB. Corolla funnelform, pubescent and often glandular outside (glabrous in one species), sometimes yellow and often with yellow blotch; stamens 5 . . . **Luteum.**

AZALEA SERIES

SUBSERIES CANADENSE

(Syn.: Rhodora, *L.*; Biltia, *Small*; R. sect. Rhodora, *G. Don*; R. sect. Sinenses, *Nakai*, in part.)

General Description:—Upright shrubs, densely or loosely branched; shoots glabrous or pilose to hirsute. Winter-buds with about 10 imbricate scales. Leaves deciduous, scattered or crowded at the end of the branchlets. Flowers 3-8, rarely to 15, from a terminal bud; the leafy shoots from separate axillary buds below. Corolla rotate-campanulate, or rotate and two-lipped, in one species partly divided to the base, white to pink or red to rose-purple, sometimes spotted, glabrous. Stamens 10, in one species 5-7, not or only little longer than the corolla, usually declinate; ovary glabrous, pubescent, or stipitate-glandular. Fruit oblong-ovoid or cylindric, with rather thin valves.

Distribution:—Four species, two in eastern North America and two in Japan.

A group of species in general appearance similar to those of subseries Schlippenbachii, but readily distinguished by the leafy shoots springing from separate buds below the terminal flower-bud, not from the basal scales of the terminal bud. The two American species resemble somewhat the species of the subseries Luteum, but differ in their rotate-campanulate corolla and in the stamens numbering more than five.

KEY TO THE SPECIES

A. Corolla not divided to the base:
  B. Stamens 10; corolla not spotted; leaves in whorls of 5 at end of branchlets:
    C. Leaves obovate to oblong-oblanceolate, pubescent beneath; flowers 3-6, magenta . . . . . **Albrechtii.**
    CC. Leaves elliptic to narrow-elliptic, glabrescent; flowers 1-3, rose-pink . . . . . **pentaphyllum.**
  BB. Stamens 5-7; corolla pink or whitish, spotted; leaves scattered, glabrous and green beneath . . **Vaseyi.**
AA. Corolla partly divided to the base, two-lipped; stamens 10; leaves scattered, tomentulose beneath, rarely exceeding 2 in. in length . . . . . **canadense.**

RHODODENDRON ALBRECHTII, *Maximowicz* in *Bull. Acad. Sci. St. Pétersb.*, vol. 15, 227 (1870); in *Mél. Biol.*, vol. 7, 335 (1870).

(Syn.: AZALEA ALBRECHTII, *Kuntze.*)

ILLUSTRATION—Nakai, *Trees & Shrubs Jap.*, ed. 2, 67 (1927).

HABIT: shrub of loose habit, 3-5 ft. tall; shoots at first with curled partly viscid grey hairs, soon glabrous and purple-brown.

FLORAL WINTER-BUDS: ovoid, with 7-9 outer broad-ovate mucronulate scales, minutely ciliate, the lower glabrous, the upper finely silky in the middle toward the apex.

LEAVES: deciduous, membranous, crowded at the end of the branchlets in clusters of 5, scattered on vigorous shoots, obovate to oblong-oblanceolate, $1\frac{1}{2}$-$4\frac{1}{2}$ in. long and $\frac{1}{2}$-$2\frac{1}{2}$ in. wide, acute or acutish, mucronate, narrowed at base into a short winged petiole, ciliate and serrulate on the margin, above sparsely clothed with appressed hispid hairs, beneath more or less densely clothed with short grey tomentum; petiole $\frac{1}{4}$-$\frac{1}{6}$ in. long, margined, pilose.

INFLORESCENCE: 4-5-flowered; flowers expanding before or with the leaves; pedicels $\frac{1}{2}$-$\frac{3}{4}$ in. long, clothed with curled glandular yellowish hairs.

CALYX: small, with ciliate purple lobes.

COROLLA: rotate-campanulate, about 2 in. across, red-purple, with short wide tube and spreading roundish ovate lobes, glabrous.

STAMENS: 10, unequal, the longest as long as the corolla: filaments glabrous or pubescent below the middle.

PISTIL: exceeding the corolla; ovary pilose and glandular; style glabrous.

CAPSULE: conic-ovoid, about $\frac{1}{2}$ in. long, purple-brown, clothed with yellow viscid hairs, erect.

HABITAT: central and northern Japan.

A handsome species characterised by the short-petioled pubescent leaves in whorls of 5 and the large bright red-purple corolla.

RHODODENDRON CANADENSE, *Torrey*.

A. Flowering shoot. B. Corolla dissected. C. Fruiting shoot. D. Anther. E. Stamen. F. Pistil. G. Ovary.

RHODODENDRON CANADENSE, *Torrey, Cat. Pl.* 151 (in *Geol. Surv. N.Y. Assembly*, No. 50). (1839).

(Syn.: R. Rhodora, *S. F. Gmelin*; Rhodora canadensis, *L.*; Azalea canadensis, *Kuntze.*)

Illustration—Curtis in *Bot. Mag.*, t. 474 (1800).

Habit: much-branched shrub, 1-3 ft. tall, with upright or ascending slender branches more or less whorled; shoots puberulous at first, becoming bright yellowish-red or pinkish and often bloomy at the end of the season, grey or light yellowish-grey the second year, later greyish-brown.

Floral Winter-buds: ovoid, acute, with about 10 acuminate to acute, pinkish, finely pubescent and ciliolate scales.

Leaves: deciduous, elliptic to oblong, $\frac{3}{4}$-$1\frac{3}{4}$, rarely to $2\frac{1}{4}$ in. long, and $\frac{1}{3}$-$\frac{3}{4}$ in. broad, obtuse or acutish, cuneate at base, ciliate and revolute at margin, dull bluish-green above and usually somewhat strigillose and on the midrib finely villous, thinly greyish tomentulose beneath and usually with scattered fulvous hairs and scattered glands, sparingly strigose on midrib; petiole slender, $\frac{1}{12}$-$\frac{1}{5}$ in. long, puberulous and sparingly strigose.

Inflorescence: 3-6-flowered; flowers expanding before the leaves; pedicels $\frac{1}{8}$-$\frac{1}{2}$ in. long, glaucous, puberulous and usually sparingly strigose.

Calyx: with very short unequal lobes, puberulous and setose-ciliate.

Corolla: rotate-campanulate, 2-lipped, rose-purple, rarely white (f. *albiflorum*, Rehd.), about $\frac{3}{4}$ in. long, the lower lip divided nearly or quite to the base into two nearly distinct narrow-oblong lobes, the upper lip with 3 short ovate lobes at apex, glabrous.

Stamens: 10, about as long as corolla, unequal; filaments pubescent at the lower third; anthers purple.

Pistil: slightly longer than stamens; ovary pubescent, sparingly glandular and sparingly setose; style glabrous or minutely pilose near base.

Capsule: ovoid-oblong, curved near base, about $\frac{1}{2}$ in. long, slightly grooved, setose and finely puberulous, light red-brown with pinkish bloom.

Habitat: north-eastern North America, from Labrador to north-eastern Pennsylvania and New Jersey, west to central New York.

A very distinct species on account of the two lower lobes being separated to or nearly to the base, a character unique in the genus. It is the northernmost species of the Azalea series.

RHODODENDRON PENTAPHYLLUM, *Maximowicz* in *Bull. Acad. Sci. St. Pétersb.*, vol. 31, 65 (1887); in *Mél. Biol.*, vol. 12, 491 (1887).

(Syn.: R. NIKOENSE, *Nakai.*)

ILLUSTRATION—Nakai, *Trees & Shrubs Jap.*, ed. 2, vol. 1, 85, 86 (1927).

HABIT: much-branched shrub or small tree, 6-25 ft. tall, with twiggy ascending and spreading branches, partly alternate and partly whorled; shoots sparingly pilose at first, soon glabrous, red-brown and somewhat angular the first year, becoming later terete and grey; trunk clothed with pale grey-brown bark.

FLORAL WINTER-BUDS: oblong-ovoid, acute with about 15 shining purplish-brown ciliolate scales.

LEAVES: deciduous, chartaceous, in whorls of 5 at the end of the branchlets, elliptic to elliptic-lanceolate, $1\frac{1}{4}$-$2\frac{1}{2}$ in. long and $\frac{3}{5}$-$1\frac{1}{4}$ in. wide, acute and mucronulate, cuneate at base, ciliate and finely serrulate, reticulately veined and the midrib villous on both surfaces, particularly toward the base, dark green above, changing in autumn to orange and crimson; petiole $\frac{1}{8}$-$\frac{1}{3}$ in. long, sparsely pilose and glandular.

INFLORESCENCE: 1-2-flowered; flowers expanding before the leaves; pedicels about $\frac{1}{2}$ in. long, glandular-pilose or glabrous.

CALYX: glabrous, with triangular or deltoid lobes $\frac{1}{12}$-$\frac{1}{5}$ in. long.

COROLLA: rotate-campanulate, $1\frac{3}{4}$-2 in. across, bright rose-pink, unspotted, with short tube and spreading suborbicular, often emarginate lobes, glabrous.

STAMENS: 10, unequal, shorter than corolla; filaments villous below the middle; anthers yellow.

PISTIL: slightly longer than stamens, as long or somewhat shorter than the corolla; ovary and style glabrous.

CAPSULE: spindle-shaped, about $\frac{3}{5}$ in. long, verruculose.

HABITAT: central and southern Japan.

A handsome and distinct species resembling somewhat *R. quinquefolium*, Bisset & Moore, which is easily distinguished by its white flowers and the leafy shoots springing from the terminal buds with the flowers. It is characterised by the nearly glabrous slender-petioled leaves in whorls of 5, by the pink flowers, the glabrous ovary and the elongated glabrous winter-buds with many scales.

RHODODENDRON VASEYI, *A. Gray*.

A. Flowering shoot. B. Leaf. C. Anther. D. Stamen. E. Fruit. F. Pistil. G. Ovary.

RHODODENDRON VASEYI, *A. Gray* in *Proc. Am. Acad.*, vol. 15, 48 (1879).

(Syn.: AZALEA VASEYI, *Rehd.*; BILTIA VASEYI, *Small.*)

ILLUSTRATION—Skan in *Bot. Mag.*, t. 8081 (1906).

HABIT: upright, rather irregularly branched shrub to 15 ft. tall, with upright and spreading branches; shoots puberulous or sparingly pilose at first, soon glabrous and becoming light red-brown, brown or greyish-brown the second year, older branches with flaky or shredding bark.

FLORAL WINTER-BUDS: ovoid, obtuse, with 7-9 suborbicular scales rounded to slightly emarginate at apex and mucronulate, the outer glabrous except ciliate, the basal ones acuminate.

LEAVES: deciduous, scattered, elliptic to elliptic-oblong, 2-4¾ in. long and ⅕-2 in. wide, acuminate, cuneate at base, usually slightly undulate on the margin, dark green and glabrous above, except the sparingly and finely villous midrib, rarely sparingly strigillose, light green beneath and glabrous or sparingly pilose on the midrib; petiole slender, ⅛-⅓ in. long, glabrous or sparingly pilose.

INFLORESCENCE: 5-8-flowered; flowers expanding before the leaves; pedicels ⅕-⅔ in. long, with short-stipitate glands, sometimes sparingly so.

CALYX: small oblique, with shallow rounded erose-glandular lobes.

COROLLA: rotate-campanulate, 1-1¼ in. long, two-lipped, light rose-coloured, with orange or orange-red dots at the base of the upper lobes, sometimes white (f. *album*, Nichols.), glabrous, the tube about ⅕ in. long lobes oblong rounded at apex, upper lip less deeply divided with the middle lobe exterior in bud.

STAMENS: usually 7, sometimes 5 or 6, unequal, the longer ones exceeding the corolla; filaments glabrous; anthers ellipsoid, pinkish.

PISTIL: exceeding the stamens; ovary glandular-pubescent; style glabrous or with few stipitate glands near base.

CAPSULE: narrow-oblong, about ½ in. long or slightly longer, with a thin narrow keel on back of the rather thin valves.

HABITAT: eastern North America, higher mountains of western North Carolina.

A distinct and handsome species characterised by the nearly glabrous leaves and deeply divided, slightly two-lipped pale pink corolla, the middle lobe of the upper lip being exterior in bud, a position not found in any other species of Azalea except occasionally in *R. Schlippenbachii*, very rarely in *R. canadense* and possibly in a few other related species.

AZALEA SERIES

SUBSERIES LUTEUM

(Syn.: Anthodendron, *Endl.*; R. sect. Pentanthera, *G. Don.*; R. a. Anthodendron, *Endl.*; R. sect. Azalea, *Reg.*; R. sect. Euazalea, *Dipp.*; R. sect. Sinenses, *Nakai*; Azalea subgen. Pentanthera, *K. Koch.*)

General Description:—Deciduous upright shrubs, rarely nearly tree-like, sometimes stoloniferous, with usually irregularly-whorled branchlets; shoots setose, pubescent or glabrous. Winter-buds with many imbricate scales. Leaves scattered, medium-sized. Inflorescence several to many-flowered, from a terminal bud, the leafy shoots from lateral buds below. Calyx usually small, about $\frac{1}{4}$ in. long, rarely up to $\frac{1}{4}$ in. long. Corolla funnelform, subregular, the tube about as long or longer than the limb, outside more or less pubescent and often glandular, rarely glabrous, white to pink, carmine or crimson, or yellow to orange and scarlet. Stamens 5, exserted and declinate. Ovary strigose or setose and often glandular; style glabrous or pubescent below the middle. Capsule with woody valves.

Distribution:—The subseries contains 19 species, of which 15 occur in eastern North America from Quebec to central Florida, and west to eastern Oklahoma, one in western North America from southern Oregon to southern California, one in eastern Europe, northern Asia Minor and the Caucasus, and two in China and Japan.

AZALEA SERIES

SUBSERIES LUTEUM

KEY TO THE SPECIES

A. Corolla yellow or with large yellow or orange blotch on the upper lip :
B. Corolla wide-funnelform with gradually expanding tube, not glandular outside ; the blotch divided by light veins into small dots :
C. Leaves glabrous beneath except on the veins ; winter-buds glabrous ; stamens shorter than corolla **japonicum.**
CC. Leaves soft-pubescent beneath ; winter-buds pubescent ; stamens as long as the corolla . . . **molle.**
BB. Corolla funnelform with cylindric tube ; blotch not dissolved into dots :
C. Corolla white or pinkish, glandular outside ; leaves glabrous at maturity except on midrib . **occidentale.**
CC. Corolla yellow or orange to scarlet or sometimes salmon-coloured :
D. Winter-buds glabrous ; flowers appearing with or after the leaves :
E. Corolla-tube more or less glandular outside, almost as long or shorter than lobes ; corolla yellow to scarlet **calendulaceum.**
EE. Corolla-tube finely pubescent and glandless outside, longer than lobes ; corolla red to scarlet **speciosum.**
DD. Winter-buds pubescent ; flowers appearing before the leaves ; corolla-tube longer than lobes :
E. Leaves glabrescent beneath, glandular while young ; winter-buds viscid ; flowers very fragrant **luteum.**
EE. Leaves densely pubescent beneath, not glandular ; flowers scentless or nearly so . . **austrinum.**
AA. Corolla white to deep pink, carmine or crimson, without large yellow blotch, or sometimes with two small yellow blotches at base of the upper lobe :
B. Flowers appearing before or with the leaves :
C. Flower-buds without prominent rows of stipitate glands near apex ; much-branched shrubs usually more than 2 ft. tall :
D. Corolla-tube distinctly longer than lobes, glandular or glandless ; leaves usually pubescent beneath :
E. Winter-buds pubescent ; corolla-tube densely and finely villous, slender, abruptly expanded at apex ; corolla usually pinkish . . . . . **canescens.**

KEY TO THE SPECIES OF THE **AZALEA** SERIES—*Contd.*

EE. Winter-buds glabrous; corolla-tube sparingly villous and hirsute or glandular-pilose, gradually dilated at apex; corolla white . . . . **alabamense.**

DD. Corolla-tube about as long as lobes:

E. Leaves pubescent beneath; corolla pink, glandular; winter-buds pubescent . . . . . **roseum.**

EE. Leaves glabrous beneath, except the strigose midrib; corolla white to pink, hirsute or glandular; winter-buds usually glabrous . . . . **nudiflorum.**

CC. Flower-buds with 5 conspicuous rows of long-stipitate glands near apex; corolla glandular-pilose and not or slightly villous; low stoloniferous shrub **atlanticum.**

BB. Flowers expanding after the leaves are fully developed; flower-buds with 5 conspicuous crest-like rows of stipitate glands at apex (except in *R. prunifolium*):

C. Branchlets and leaves more or less strigose or pubescent:

D. Calyx-lobes oblong to oblong-lanceolate, rarely short; corolla finely villous; leaves usually 4-10 cm. long; winter-buds pubescent; flowers appearing before the terminal buds are formed . . **oblongifolium.**

DD. Calyx-lobes short, semi-orbicular or ovate; corolla villous and glandular-pilose; leaves usually 2-6 in. long; winter-buds usually glabrous; flowers expanding when the terminal buds are forming:

E. Winter-buds with more than 15 aristate-mucronate scales; branchlets bright red-brown, usually densely strigose; leaves often pubescent beneath, serrulate-ciliate . . . . . **serrulatum.**

EE. Winter-buds with less than 15 obtusish or acutish scales; branchlets usually pale, strigillose, hispid or glabrescent; leaves usually nearly glabrous . **viscosum.**

CC. Branchlets and leaves glabrous or leaves sometimes strigillose on midrib beneath; winter-buds glabrous:

D. Corolla white or pink, the tube glandular-pilose outside; leaves glaucous beneath, acute or obtusish **arborescens.**

DD. Corolla crimson, glabrous or nearly glabrous outside; leaves light green beneath, acuminate **prunifolium.**

RHODODENDRON ALABAMENSE, *Rehder* in *Wilson & Rehder, Monog. Azaleas*, 141 (1921).

(Syn.: AZALEA ALABAMENSIS, *Ashe.*)

HABIT: low shrub with irregularly-whorled branches; shoots densely or sparingly strigose when young, one-year-old branches greyish or yellowish-brown, older branches usually dark brown.

FLORAL WINTER-BUDS: ovoid, glabrous, brown, with 9-15 ovate scales rounded and mucronate at apex, densely white-ciliate.

LEAVES: deciduous, obovate or elliptic to elliptic-oblong or obovate-oblong, $1\frac{1}{4}$-$2\frac{1}{2}$ in. long and $\frac{1}{2}$-$1\frac{1}{4}$ in. wide, acute or obtusish and mucronate, cuneate at base, ciliate, sparingly or very sparingly puberulous above and often finely strigillose, glaucescent or sometimes pale green beneath and usually rather densely, sometimes more sparingly short-villous, the midrib villous above and usually sparingly strigose beneath; petiole short, usually finely villous and strigillose.

INFLORESCENCE: 6-10-flowered; flowers unfolding with the leaves, fragrant; pedicels $\frac{1}{5}$-$\frac{2}{5}$ in. long, sparingly villous and rather densely hirsute, glandular or glandless.

CALYX: with unequal roundish to ovate lobes, about $\frac{1}{12}$ in. long, densely setose, glandless.

COROLLA: funnelform, about $1\frac{1}{2}$ in. across, white, with cylindric tube, $\frac{4}{5}$-1 in. long, gradually dilated at apex, outside sparingly villous and glandular-pilose or sometimes hirsute and glandless, the lobes ovate or ovate-oblong, acute, $\frac{2}{5}$-$\frac{3}{4}$ in. long, distinctly shorter than tube.

STAMENS: twice as long as corolla-tube; filaments villous below the middle; anthers yellow.

PISTIL: scarcely longer than stamens; ovary densely setose, glandular or nearly glandless; style finely villous toward the base.

CAPSULE: cylindric-oblong, $\frac{3}{5}$ in. long, sparingly and finely villous and setose, with or without glands.

HABITAT: south-eastern North America, Alabama.

Related to *R. nudiflorum*, Torr., and *R. canescens*, G. Don; from the first easily distinguished by the much longer and slenderer corolla-tube, the pure white fragrant flowers, and the pubescent leaves usually glaucous beneath, from the second by the glabrous winter-buds, the less villous and more pilose and less slender corolla-tube, less exserted stamens, larger limb and densely strigose ovary.

RHODODENDRON ARBORESCENS, *Torrey, Fl. U.S.*, 425 (1824).

(Syn.: AZALEA ARBORESCENS, *Pursh.*; A. VERTICILLATA, *Lodd.*)

ILLUSTRATION—Loddiges, *Bot. Cab.*, t. 1632 (1830).

HABIT: upright shrub to 8, rarely a small tree to 18 ft. tall, with irregularly-whorled branches; young shoots glabrous, rarely with a few scattered hairs, often slightly bloomy, becoming light grey or light greyish-brown the second year.

FLORAL WINTER-BUDS: glabrous, ovoid, light brown, with about 10 broad-ovate scales rounded and usually mucronulate, ciliate, the basal ones often long-pointed.

LEAVES: deciduous, scattered, papyraceous at maturity, obovate or sometimes elliptic to oblong-lanceolate, 1¼-3¼ in. long and ½-1¼ in. wide, acute or obtuse, mucronate, cuneate at base, ciliate, lustrous bright green above, sparingly strigose beneath or quite glabrous and glaucous or glaucescent, rarely green; petiole slender, ⅛-⅓ in. long, glabrous or rarely with a few strigose hairs.

INFLORESCENCE: 3-6-flowered; flowers after the leaves are fully developed; pedicels slender, ⅓-⅘ in. long, glandular-hirsute or glandless, sometimes glabrous.

CALYX: with unequal ovate to linear-oblong usually obtuse lobes, ⅛-¼ in. long, glandular-ciliate, sometimes villous.

COROLLA: funnelform, white or pinkish, 1½-2 in. across, the tube 1-1¼ in. long, glandular-hirsute and sometimes slightly villous, pubescent inside except toward the base, the lobes ovate-oblong, acuminate, ⅖-½ in. long, stipitate-glandular along the middle on back.

STAMENS: about twice as long as tube; filaments pubescent below the middle, purple above.

PISTIL: as long or somewhat longer than stamens; ovary glandular-setose with reddish glands; style glabrous or sometimes pubescent near base, purple above.

CAPSULE: oblong-ovoid, ⅓-¾ in. long, densely glandular-setose.

HABITAT: eastern North America, from Pennsylvania to Georgia and eastern Tennessee, in the mountains.

A very distinct species characterised by glabrous branchlets and leaves, late appearing fairly large fragrant white flowers with long-exserted purple stamens and style. The dry leaves have a pleasing smell of coumarin retained for many years in dried specimens.

There are the following colour forms and one variety:—

f. *rubescens*, Rehd. Flowers smaller, purple-pink, the upper lobe with two small yellow blotches.

f. *flavescens*, Rehd. Flowers pale yellow, the upper lobe with two small deep yellow blotches.

var. *Richardsonii*, Rehd. Of lower stature; leaves smaller, more glaucous; corolla more villous and more densely glandular-hirsute; calyx-lobes shorter, semiorbicular to ovate. A form of the higher mountains.

RHODODENDRON ATLANTICUM, *Rehder* in *Wilson & Rehder, Monog. Azaleas*, 147 (1921).

(Syn.: AZALEA ATLANTICA, *Ashe.*)

ILLUSTRATION—Coker in *Jour. Elisha Mitchell Sci. Soc.*, vol. 36, 98, t. 1 (1920).

HABIT: low stoloniferous shrub, rarely more than 2 ft. high, with slender upright usually sparingly branched or nearly simple stems; young shoots sparingly strigose and sometimes glandular-hirsute, otherwise glabrous, occasionally slightly glaucescent, reddish-brown in autumn, becoming greyish-brown.

FLORAL WINTER-BUDS: with 9-12 ovate mucronulate light brown and white-ciliolate scales, glabrous or slightly silky-pubescent.

LEAVES: deciduous, chartaceous at maturity, obovate to oblong-obovate, $1\frac{1}{4}$-$2\frac{1}{2}$ in. long, and $\frac{3}{5}$-$\frac{4}{5}$ in. broad, rounded or acutish and gland-tipped at apex, cuneate at base, setose-ciliate or minutely serrulate-ciliate, bright or bluish-green and glabrous above except the villous midrib, glabrous beneath except sparingly strigillose and sometimes pubescent on the midrib, rarely strigose on the surface, bright green or glaucescent, the veinlets obsolete; petiole $\frac{1}{24}$-$\frac{1}{5}$ in. long, sparingly strigose.

INFLORESCENCE: 4-10-flowered; flowers expanding with or shortly before the leaves, very fragrant; pedicels $\frac{1}{3}$-$\frac{1}{2}$ in. long, hirsute or glandular-hirsute, rarely minutely villous besides.

CALYX: with broad-ovate or occasionally oblong lobes $\frac{1}{12}$-$\frac{1}{6}$ in. long, glandular-ciliate or sometimes eglandular.

COROLLA: funnelform, about $1\frac{1}{4}$ in. across, white, usually flushed pink or purple outside, the tube cylindric, rather gradually dilated at apex, $\frac{4}{5}$-1 in., rarely nearly $1\frac{1}{4}$ in. long, with short gland-tipped hairs, otherwise glabrous or slightly villous, glabrous or nearly so inside, the lobes ovate to ovate-oblong, $\frac{1}{2}$-$\frac{4}{5}$ in. long, acute, stipitate-glandular along the middle outside.

STAMENS: about twice as long as tube; filaments hairy below the middle.

PISTIL: longer than stamens; ovary clothed with setose gland-tipped or glandless hairs; style pubescent below the middle, usually purplish above.

CAPSULE: ovoid-oblong, about $\frac{3}{4}$ in. long, setose, glandular or glandless.

HABITAT: eastern North America, from Delaware to South Carolina, restricted to the coastal plain region.

Though most closely related to *R. viscosum* the species has been on account of its early flowering time confused with *R. nudiflorum*. From the latter it is easily distinguished by its low stoloniferous habit, the fragrant flowers and the conspicuous row of stipitate glands on back of the corolla-lobes. From *R. viscosum* it differs chiefly in the low stoloniferous habit, the nearly glabrous branchlets and the early appearing flowers.

RHODODENDRON AUSTRINUM, *Rehder* in *Bailey, Stand. Cycl. Hort.*, vol. 6, 3571 (1917).

(Syn.: AZALEA AUSTRINA, *Small.*)

HABIT: slender-branched shrub to 8 ft.; young shoots covered with a short soft pubescence mixed with usually copious glandular hairs, sparingly strigose chiefly toward the apex, becoming red-brown in autumn and greyish-brown the second year.

FLORAL WINTER-BUDS: ovoid, densely greyish pubescent, with about 15 ovate scales roundish to acutish at the apex and acuminulate.

LEAVES: deciduous, chartaceous, elliptic to ovate or oblong-obovate, $1\frac{1}{4}$-$3\frac{1}{2}$ in. long and $\frac{3}{4}$-$1\frac{1}{2}$ in. broad, acute or obtusish and mucronate, cuneate at base, setosely ciliate, finely pubescent on both sides, more densely beneath, particularly on the veins, rarely glabrescent above at maturity; petiole $\frac{1}{8}$-$\frac{1}{3}$ in. long, pubescent and glandular and usually sparingly strigose.

INFLORESCENCE: 8-15-flowered; flowers expanding before or with the leaves, slightly fragrant; pedicels $\frac{1}{5}$-$\frac{2}{5}$ in. long, pubescent and glandular-setose.

CALYX: with unequal broad-ovate to oblong lobes about $\frac{1}{12}$ in. long, glandular-ciliate and pubescent outside.

COROLLA: funnelform, about $1\frac{1}{2}$ in. across, yellow and orange, the tube usually purplish or with 5 purplish stripes, cylindric, abruptly dilated at apex, about $\frac{3}{4}$ in. long, finely pubescent and stipitate-glandular outside, the lobes ovate, about $\frac{1}{2}$ in. long, short-acuminate, finely pubescent outside.

STAMENS: nearly 3 times as long as tube; filaments pubescent below the middle; anthers ochraceous.

PISTIL: slightly exceeding the stamens; ovary covered with whitish strigose, partly gland-tipped hairs; style densely short pubescent on the lower third.

CAPSULE: cylindric-oblong, slightly narrowed toward the apex, $\frac{3}{4}$-1 in. long, covered with thin fine pubescence and partly gland tipped strigose hairs.

HABITAT: south-eastern North America, northern Florida.

The species is closely related to *R. canescens*, Sweet, but easily distinguished by the yellow flowers.

RHODODENDRON CALENDULACEUM, *Torrey, Fl. U.S.*, 425 (1824).

(Syn.: RHODODENDRON LUTEUM, *Schneid.*, not *Sweet*; AZALEA LUTEA, *L.*, in part; A. NUDIFLORA, *L.*, in part; A. FLAMMEA, *Bartr.*, name only; A. CALENDULACEA, *Michx.*, in part; A. AURANTIACA, *Dietr.*)

ILLUSTRATION—Sims in *Bot. Mag.*, t. 1721 (1815).

HABIT: much-branched shrub, 4-10, rarely to 15 ft. tall, with upright and spreading branches; shoots pubescent and strigillose.

FLORAL WINTER-BUDS: ovoid, with 9-12 broad-ovate scales rounded and apiculate at apex, glabrous except densely white-ciliate.

LEAVES: deciduous, membranous, broad-elliptic to elliptic-oblong or obovate-oblong, rarely obovate, $1\frac{1}{2}$-$3\frac{1}{4}$ in. long, and $\frac{1}{2}$-$1\frac{1}{2}$ in. wide, acute and mucronate, broad-cuneate at base, finely pubescent above and more densely so beneath when young, particularly on and along the midrib, changing in autumn to orange and crimson; petiole $\frac{1}{12}$-$\frac{1}{5}$ in. long, pubescent.

INFLORESCENCE: 5-7-flowered; flowers expanding with or shortly after the leaves, nearly scentless; pedicels $\frac{1}{4}$-$\frac{1}{2}$ in. long, setulose and usually glandular.

CALYX: with ovate to oblong lobes, $\frac{1}{12}$-$\frac{1}{6}$ in. long, setulose and glandular-ciliate.

COROLLA: funnelform, about 2 in. across, yellow or orange to scarlet, sometimes partly salmon-pink, with orange blotch on upper lobe; the tube cylindric, gradually dilated above the middle, glandular-pilose and pubescent outside, the lobes ovate, as long or slightly longer than the tube, usually with wavy margin, abruptly contracted into a short point, slightly pubescent outside.

STAMENS: 5, nearly 3 times as long as corolla-tube; filaments pubescent below the middle.

PISTIL: as long or longer than stamens; ovary covered with setose partly gland-tipped hairs; style pilose toward the base, sometimes glabrous.

CAPSULE: ovoid-oblong, about $\frac{3}{4}$ in. long, setose and pubescent.

HABITAT: eastern North America, in the mountains from Pennsylvania to northern Georgia, west to south-eastern Ohio.

A showy species characterised by yellow to scarlet flowers, wide-funnelform and glandular-pubescent outside. The form with yellow flowers has been distinguished as var. *croceum*, Sweet, and that with orange-red to scarlet flowers as var. *aurantium* Rehd.

RHODODENDRON CANESCENS, *Sweet, Hort. Brit.*, ed. 2, 343 (1830).

(Syn.: AZALEA CANESCENS, *Michx.*; A. BICOLOR, *Pursh.*)

ILLUSTRATION—Abbot, *Nat. Hist. Lepidopt. Georgia*, vol. 1, t. 27 (1797).

HABIT: slender upright shrub to 12 or 15 ft. tall, with irregularly-whorled, erect or ascending branches; young shoots finely villous and usually sparingly strigose.

FLORAL WINTER-BUDS: ovoid, with 12-15 broad-ovate acuminulate and densely greyish-pubescent scales.

LEAVES: deciduous, chartaceous at maturity, usually oblong-obovate to oblanceolate or oblong, rarely elliptic or obovate, 1¾-3½ in. long and ½-1½ in. wide, acute, rarely obtusish, mucronulate, cuneate at base, setosely-ciliate, sparingly pubescent above or glabrescent except the midrib, densely pubescent or greyish tomentulose beneath chiefly on the veins and midrib, usually sparingly strigose on the midrib near base, slightly reticulate; petiole ½-⅓ in. long, finely pubescent and sparingly strigose.

INFLORESCENCE: 6-15-flowered; flowers expanding before or with the leaves; pedicels ⅕-⅖ in. long, villous and hirsute and sometimes stipitate-glandular.

CALYX: with unequal semiorbicular to ovate lobes scarcely exceeding ¼ in., ciliate and sometimes glandular-ciliate.

COROLLA: funnelform, about 1½ in. across, pink to nearly white with pink tube which is cylindric, abruptly dilated at apex, ¾-nearly 1 in. long and distinctly longer, sometimes nearly twice as long as the lobes, finely villous outside and stipitate-glandular, rarely somewhat pilose, the lobes ovate, ½-⅔ in. long.

STAMENS: much exserted, nearly 3 times as long as tube; filaments pubescent below the middle.

PISTIL: slightly longer or about as long as stamens; ovary densely white-pubescent and sparingly setulose, glandless; style densely short-pubescent on the lower third.

CAPSULE: cylindric-oblong, slender, ¾-1 in. long, pubescent and sparingly setose.

HABITAT: south-eastern North America; North Carolina to northern Florida; west to south-eastern Texas, on the coastal plain.

This species is chiefly characterised by the rather narrow, generally oblong-obovate pubescent leaves slightly reticulate beneath at maturity, by the slender corolla-tube abruptly enlarged into a small limb and clothed outside with a fine villous tomentum interspersed with small stipitate glands, and by the much exserted stamens often 3 times as long as tube. It varies considerably in its pubescence; sometimes it is nearly glabrous (f. *subglabrum*, Rehd.). A variety with the under side glaucous or glaucescent and densely pubescent is var. *candidum*, Rehd. (*R. candidum*, Rehd., *Azalea candida*, Small).

RHODODENDRON JAPONICUM, *Suringar* in *Gartenfl.*, vol. 57, 516 (1908).

(Syn.: R. MOLLE, *Sieb. & Zucc.*, not *G. Don*; R. SINENSE, *Maxim.*, not *Sweet*; R. GLABRIUS, *Nakai*; AZALEA JAPONICA, *A. Gray.*)

ILLUSTRATION—Hooker in *Bot. Mag.*, t. 5905 (1871).

HABIT: much-branched shrub with upright or ascending fairly stout branches, 2-6 ft. tall; shoots sparingly setose or glabrous.

FLORAL WINTER-BUDS: ovoid, acute or acutish with 9-12 broad-ovate mucronate or acuminate grey-brown or pale purple-brown scales minutely puberulous toward the apex and densely white-ciliolate.

LEAVES: deciduous, obovate to obovate-oblong or oblanceolate, 2-4 in. long and $\frac{3}{4}$-$1\frac{1}{4}$ in. wide, obtuse and mucronulate, cuneate at base, ciliate, with scattered appressed-setose hairs above and on the veins beneath, dark and dull green above, lighter green beneath and strongly veined; petiole $\frac{1}{8}$-$\frac{1}{3}$ in. long, sparingly setose or glabrous.

INFLORESCENCE: 6-12-flowered; flowers expanding before the leaves; pedicels $\frac{1}{3}$-$\frac{3}{4}$ in. long, with scattered setose hairs.

CALYX: small, with obtuse lobes furnished with setose grey hairs.

COROLLA: broad-funnelform, 2-$2\frac{1}{2}$ in. across, orange or salmon-red to brick-red, with large orange blotch divided into small dots, tomentulose outside, the lobes oval to broad-oblong, rounded or sometimes acutish at apex, longer than the wide tube.

STAMENS: 5, unequal, shorter than corolla; filaments pilose below the middle; anthers dark brown.

PISTIL: exceeding the stamens, nearly as long as corolla; ovary villous or pilose; style glabrous.

CAPSULE: oblong-ovoid to cylindric, $\frac{1}{5}$-1 in. long, brown, often bloomy, with scattered pilose and villous hairs, subtended by the persistent calyx.

HABITAT: central and northern Japan, in open country.

A distinct species characterised by large orange to red flowers in many-flowered clusters and by rather large leaves glabrescent beneath. There is a form with bright yellow flowers: f. *aureum*, Wils.

RHODODENDRON LUTEUM, *Sweet* (Plate I.).

A. Flowering shoot. B. Pistil. C. Stamen. D. Anther. E. Ovary.

RHODODENDRON LUTEUM, *Sweet* (Plate II.).

A. Fruiting shoot with foliage.

RHODODENDRON LUTEUM, *Sweet, Hort. Brit.*, ed. 2, 343 (1830).

(Syn.: R. FLAVUM, *G. Don, Gen. Syst.*; AZALEA PONTICA, *L.*; ANTHODENDRON PONTICUM, *Reichenb.*)

ILLUSTRATION—Curtis in *Bot. Mag.*, t. 433 (1799).

HABIT: a densely-branched spreading shrub 2-12 ft. tall and more in diameter; shoots glandular-villous when young.

FLORAL WINTER-BUDS: ovoid, minutely pubescent and viscid, with 9-12 obtusish and mucronulate ciliolate scales.

LEAVES: deciduous, oblong to oblong-lanceolate or oblong-oblanceolate, 2-4 in. long and $\frac{1}{2}$-$1\frac{1}{4}$ in. wide, acute or obtuse and mucronate, cuneate at base, ciliate and serrulate, with scattered appressed glandular bristles on both sides and at first clothed with short villous greyish-pubescence which soon disappears; petiole $\frac{1}{8}$-$\frac{1}{3}$ in. long, glandular-pubescent.

INFLORESCENCE: 7-12-flowered; flowers expanding before the leaves, very fragrant; pedicels $\frac{1}{4}$-$\frac{4}{5}$ in. long, glandular-pubescent, viscid.

CALYX: with 5 unequal ovate to oblong lobes $\frac{1}{12}$-$\frac{1}{4}$ in. long, glandular-pubescent outside and glandular-ciliate.

COROLLA: funnelform, $1\frac{3}{4}$-2 in. across, yellow, with a narrow cylindric tube about $\frac{3}{4}$ in. long, and spreading ovate-oblong acutish lobes shorter or nearly as long as the tube, densely glandular-pubescent and viscid outside.

STAMENS: 5, much exserted, as long or longer than corolla: filaments pilose below the middle.

PISTIL: slightly exceeding the stamens; ovary glandular-pilose; style finely villous toward the base or glabrous, with capitate stigma.

CAPSULE: cylindric, $\frac{1}{5}$-1 in. long, furrowed, glabrescent.

HABITAT: eastern Europe to the Caucasus.

A distinct species characterised by the viscid young growth, the rather large pubescent leaves and the yellow, very fragrant flowers with cylindric glandular-pubescent sticky tube.

RHODODENDRON MOLLE, *G. Don, Gen. Syst.*, vol. 3, 846 (1834).

(Syn.: R. SINENSE, *Sweet*; AZALEA MOLLIS, *Bl.*; A. SINENSIS, *Lodd.*)

ILLUSTRATION—Sweet, *Brit. Flow. Gard.*, ser. 1, vol. 3, t. 290 (1829).

FLORAL WINTER-BUDS: ovoid, with 9-12 broad-ovate mucronate or acuminate scales densely grey-pubescent or sometimes glabrescent.

HABIT: sparingly branched shrub 1-4 ft. tall, with rather stout upright branches, villous when young and often setose.

LEAVES: deciduous, oblong to oblong-lanceolate, $2\frac{1}{2}$-6 in. long and $\frac{3}{4}$-$2\frac{1}{4}$ in. wide, obtuse and mucronulate, cuneate at base, ciliate and often revolute at margin, soft-pubescent above, at least when young, clothed beneath with greyish-white dense pubescence, sometimes reduced to the veins; petiole $\frac{1}{2}$-$\frac{1}{4}$ in. long, pubescent.

INFLORESCENCE: many-flowered; flowers expanding before the leaves; pedicels $\frac{1}{2}$-1 in. long, puberulous, without or only with few bristles.

CALYX: small, pubescent, ciliate, with few bristles.

COROLLA: broad-funnelform, 2-$2\frac{1}{2}$ in. across, golden-yellow with a large greenish blotch separated into small dots, tomentulose outside, the lobes oval or ovate to broad-oblong, longer than the wide tube.

STAMENS: 5, as long as corolla; filaments pilose below the middle.

PISTIL: exceeding the stamens; ovary pilose; style glabrous.

CAPSULE: cylindric-oblong, $\frac{3}{4}$-1 in. long, finely pubescent and sparingly setose.

HABITAT: eastern to central China, chiefly in the mountains, in open country or thin pine woods.

A distinct species characterised by large yellow flowers velutinous outside and rather large leaves greyish-pubescent beneath.

RHODODENDRON NUDIFLORUM, *Torrey, Fl. U.S.*, 424 (1824).

(Syn.: R. VENUSTUM, *Salisb.*, in part; ANTHODENDRON NUDIFLORUM, *Reichenb.*; AZALEA LUTEA, *L.*, in part; A. NUDIFLORA, *L.*; A. PERICLYMENOIDES, *Michx.*; A. PERICLYMENA, *Pers.*)

ILLUSTRATION—Ker in *Bot. Reg.*, vol. 2, t. 120 (1816).

HABIT: much-branched shrub, 2-6, rarely to 8 ft. tall, with irregularly-whorled branches; shoots slightly pubescent and sparingly strigose or nearly glabrous when young, becoming dull brown or greyish later.

FLORAL WINTER-BUDS: ovoid, brown, glabrous or slightly pubescent, with about 9 rounded and mucronulate ciliolate scales.

LEAVES: deciduous, membranous, elliptic to oblong or obovate to oblong-obovate, $1\frac{1}{4}$-$3\frac{1}{2}$ in. long and $\frac{1}{2}$-$1\frac{1}{4}$ in. wide, acute or abruptly acuminulate, rarely obtusish, mucronulate, cuneate at base, ciliolate, bright green above and finely pubescent on the midrib, scarcely paler beneath, strigillose and sometimes sparingly pubescent on the midrib; petiole $\frac{1}{12}$-$\frac{1}{6}$ in. long, strigillose and sometimes slightly pubescent.

INFLORESCENCE: 6-12-flowered; flowers expanding shortly before the leaves; pedicels $\frac{1}{5}$-$\frac{2}{5}$ in. long, strigose-pilose and sometimes finely pubescent, rarely sparingly glandular.

CALYX: with unequal semiorbicular to ovate or rarely oblong lobes $\frac{1}{24}$-$\frac{1}{12}$ in. long, long-ciliate.

COROLLA: funnelform, about $1\frac{1}{2}$ in. across, usually light pink or whitish with pink tube, rarely white (f. *album*, Sweet), the tube about $\frac{3}{4}$ in. long, rather gradually dilated above, finely pubescent and pilose or strigose-pilose outside, the lobes ovate to oblong-ovate, abruptly acuminate, $\frac{1}{2}$-$\frac{2}{5}$ in. long, finely pubescent outside or glabrescent toward the apex, pilose along the middle.

STAMENS: nearly three times as long as tube, declinate; filaments pubescent below the middle; anthers brownish-yellow.

PISTIL: slightly exceeding the stamens; ovary clothed with setose-glandless hairs, rarely white-tomentose and interspersed with sparse setose hairs; style finely pubescent at the lower third, purplish or purple above.

CAPSULE: oblong to narrow-oblong, narrowed toward the apex, $\frac{1}{2}$-$\frac{4}{5}$ in. long, finely pubescent and usually strigose.

HABITAT: eastern North America; Massachusetts to North Carolina; west to southern Ohio and eastern Tennessee.

One of the earliest species to bloom. It is characterised by the bright green nearly glabrous leaves, the glabrous winter-buds, the usually pink scentless or nearly scentless flowers with a cylindric tube slightly longer than the lobes, covered in the typical form outside with a fine pubescence and glandless pilose hairs, but in var. *glandiferum*, Rehd., the corolla-tube is clothed with rather short gland-tipped hairs of nearly equal length, the corolla is usually of a deeper pink or carmine and the winter-buds are sometimes finely pubescent.

RHODODENDRON OBLONGIFOLIUM, *Millais, Rhodod.*, 219 (1917).

(Syn.: AZALEA OBLONGIFOLIA, *Small.*)

HABIT: upright shrub to 6 ft. or less, with irregularly whorled branches; young shoots with short and rather sparse villous pubescence and usually sparingly strigose or sometimes nearly glabrous.

FLORAL WINTER-BUDS: ovoid, greyish-pubescent and with 9-12 ovate acuminulate or obtuse scales.

LEAVES: deciduous, obovate or elliptic-obovate to oblong-oblanceolate, rarely oblong, 1½-4 in. long and ⅖-1½ in. broad, acute or acutish and mucronulate, cuneate at base, dull green and glabrous above except the villous midrib, or sometimes strigillose and minutely pubescent, beneath light green, rarely glaucescent, pilose and strigillose on the midrib, pubescent or nearly glabrous on the face; petiole ½-⅛ in. long, finely pubescent.

INFLORESCENCE: 7-12-flowered; flowers expanding after the leaves are fully developed, but before the winter-buds are formed; pedicels ⅖-⅕ in. long, sparingly villous and glandular-hirsute.

CALYX: with unequal ovate to oblong or lanceolate lobes, ½-⅛ in. long, obtuse or acute, long-ciliate and sparingly villous outside.

COROLLA: funnelform, about 1¼ in. across, white, the tube cylindric, abruptly dilated at apex, 1-1¼ in. long, thinly villous and sparingly glandular-hirsute outside or more densely villous and without stipitate glands, inside glabrous or sparingly pubescent about the middle, the lobes oblong-ovate, ¾-⅘ in. long, acute, stipitate-glandular along the middle of the back.

STAMENS: about twice as long as tube, slightly exceeding the corolla lobes; filaments villous below the middle.

PISTIL: longer than stamens; ovary covered with setose hairs partly glandular; style finely pubescent at the lower third or sometimes glabrous.

CAPSULE: ovoid-oblong to narrow-oblong, ½-¾ in. long, finely villous and glandular-setose.

HABITAT: south-eastern North America; northern Arkansas to Oklahoma and south-eastern Texas.

This species is most nearly related to *R. viscosum* and *R. serrulatum*, but differs chiefly in the finely villous and sparingly-strigose branchlets, the pubescent winter-buds, the larger, more pubescent leaves of thinner texture, the larger corolla, the longer calyx-lobes, and in the appearance of the flowers before the winter-buds are formed.

RHODODENDRON OCCIDENTALE, *A. Gray, Bot. Calif.*, vol. 1, 458 (1876).

(Syn.: AZALEA CALENDULACEA, *Hook. & Arn.*, not *Michx.*; A. CALIFORNICA, *Torr. & Gray*; A. OCCIDENTALIS, *Torr. & Gray.*)

ILLUSTRATION—Hooker in *Bot. Mag.*, t. 5005 (1857).

HABIT: much-branched shrub to 8 ft., with upright branches; shoots soft-pubescent or glabrous, later brown.

FLORAL WINTER-BUDS: ovoid, glabrous or finely pubescent, with 9-12 ovate to ovate-lanceolate, acuminate and aristate-mucronate or mucronate scales.

LEAVES: deciduous, chartaceous, elliptic to oblong-lanceolate, $1\frac{1}{4}$-$3\frac{1}{2}$ in. long and $\frac{1}{2}$-$1\frac{1}{4}$ in. wide, acute or obtusish and mucronate, cuneate at base, ciliate, thinly pubescent on both surfaces, rarely nearly glabrous except pubescent on the midrib above and strigose on the midrib and on the veins beneath, changing to yellow, scarlet and crimson in autumn; petiole rather stout, $\frac{1}{12}$-$\frac{1}{5}$ in. long.

INFLORESCENCE: 6-12-flowered; the flowers expanding with or rarely before the leaves; pedicels $\frac{1}{5}$-$\frac{2}{5}$ in. long, pubescent and more or less glandular, sometimes pilose and glandless, rarely nearly glabrous.

CALYX: with broadly ovate to oblong-ovate obtuse lobes $\frac{1}{12}$-$\frac{1}{5}$ in. long, densely ciliate.

COROLLA: funnelform, $1\frac{1}{2}$-2 in. across, white or sometimes pink, with a yellow blotch on the upper lobe, the tube gradually dilated upward, $\frac{3}{4}$-$1\frac{1}{5}$ in. long, villous and glandular-pilose outside, about as long as the broad-ovate acutish lobes.

STAMENS: 5, about as long as corolla; filaments pilose below the middle.

PISTIL: as long or longer than stamens; ovary glandular-pilose; style finely pubescent or sometimes villous at base, rarely glabrous.

CAPSULE: ovoid-oblong, $\frac{1}{2}$-$\frac{3}{4}$ in. long, setose-pilose or sometimes stipitate-glandular.

HABITAT: western North America; southern Oregon to southern California.

This species is nearly related to *R. calendulaceum*, Torr., but easily distinguished by the white or pink flowers and the acuminate to mucronate scales of the winter-buds. A variety with smaller and narrower leaves and smaller rose-coloured very fragrant flowers is var. *sonomense*, Rehd. (*R. sonomense*, Greene).

RHODODENDRON PRUNIFOLIUM, *Millais, Rhodod.*, 230 (1917).

(Syn.: AZALEA PRUNIFOLIA, *Small.*)

HABIT: slender upright shrub to 8 ft. tall, with irregularly whorled branches; young shoots glabrous, usually dark-purplish red, becoming light greyish-brown or greyish the second year.

LEAVES: deciduous, elliptic or sometimes obovate to oblong, $1\frac{1}{4}$-4 or occasionally to 5 in. long and $\frac{3}{4}$-$1\frac{1}{2}$ in. wide, acute or short-acuminate, mucronate, ciliate, dark or bright green and glabrous or rarely sparingly strigillose above, lighter green beneath and sparingly strigose on the midrib and sometimes on the veins, midrib and secondary veins often rather prominent and light-coloured beneath, slightly impressed above; petiole $\frac{1}{8}$-$\frac{1}{4}$ in. long, glabrous or rarely sparingly strigose.

INFLORESCENCE: 4-5-flowered; flowers appearing after the leaves are fully formed; pedicels about $\frac{1}{5}$ in. long, hirsute.

CALYX: with unequal semiorbicular to ovate lobes about $\frac{1}{24}$ in. long, long-ciliate.

COROLLA: funnelform, crimson, $1\frac{1}{2}$-2 in. across, the tube gradually widened above the middle, $\frac{4}{5}$-1 in. long, glabrous or sparingly hirsute, pubescent inside, the lobes broad-ovate, about $\frac{3}{5}$ in. long, abruptly acuminulate, finely villous and sometimes glandular-pilose outside.

STAMENS: nearly 3 times as long as tube; filaments villous below the middle.

PISTIL: exceeding the stamens, $3\frac{1}{4}$ in. long; ovary setose, glandless; style glabrous, purple above.

CAPSULE: ovoid-oblong, about $\frac{4}{5}$ in. long, strigose and finely puberulous.

HABITAT: south-eastern North America, south-western Georgia and eastern Alabama.

A very distinct species characterised by its crimson late appearing rather large flowers, the bright green glabrous or nearly glabrous rather large leaves and by the glabrous branchlets, the whole plant without any glandular pubescence except occasionally a few glands on the back of the corolla-lobes.

RHODODENDRON ROSEUM, *Rehder* in *Wilson & Rehder, Monog. Azaleas*, 138 (1921).

(Syn.: RHODODENDRON NUDIFLORUM, *Darlington*, not *Torr.*; R. CANESCENS, *Porter*, not *Sweet*; R. PRINOPHYLLUM, *Millais*; AZALEA ROSEA, *Loisel.*; A. CANESCENS, *Pursh*, in part, not *Michx.*; A. PRINOPHYLLA, *Small.*)

ILLUSTRATIONS—Loiseleur-Deslongchamps in *Nouv. Duhamel*, vol. 5, t. 64 (1812); *Meehan's Monthly*, vol. 2, t. 2 (1892).

HABIT: much-branched shrub, 2-8, rarely to 15 ft. tall, with irregularly-whorled branches; shoots rather finely pubescent and sparingly strigose when young, becoming greyish-brown or light brown the second year.

FLORAL WINTER-BUDS: ovoid, greyish-pubescent, with about 9 generally ovate obtusish and slightly mucronate scales.

LEAVES: deciduous, membranous, elliptic or obovate to obovate-oblong, $1\frac{1}{4}$-$2\frac{3}{4}$ in. long and $\frac{1}{2}$-$2\frac{1}{4}$ in. wide, acute or short-acuminate and mucronate, cuneate at base, ciliate, sparingly pubescent above, densely greyish-villous beneath, sometimes thinly villous, rarely only along the midrib, strigillose on the midrib, usually bluish-green or dull green.

INFLORESCENCE: 5-9-flowered; flowers expanding with the leaves, fragrant; pedicels $\frac{1}{5}$-$\frac{3}{5}$ in. long, finely villous and glandular-setose.

CALYX: with unequal, semiorbicular to ovate lobes, rarely exceeding $\frac{1}{12}$ in., finely pubescent and glandular-ciliate.

COROLLA: funnelform with oblique limb, about $1\frac{1}{2}$ in. across, usually bright pink, rarely whitish, with cylindric tube $\frac{3}{5}$-$\frac{4}{5}$ in. long, gradually dilated toward the apex, covered with thin villous tomentum interspersed with numerous gland-tipped hairs of unequal length, pubescent inside, the lobes ovate, about as long or slightly shorter than tube, abruptly pointed.

STAMENS: slightly longer than twice as long as tube; filaments pubescent below the middle; anthers ochraceous.

PISTIL: exceeding the stamens; ovary covered with a fine villous tomentum overlaid with numerous setose-appressed partly gland-tipped hairs; style sparingly or sometimes more densely pubescent toward the base.

CAPSULE: oblong, narrowed toward the apex, about $\frac{3}{4}$ in. long, sparingly puberulous and glandular-setose.

HABITAT: eastern North America; from south-western New Hampshire to south-western Virginia, west to southern Illinois and south-eastern Missouri.

Closely related to *R. nudiflorum*, Torr., from which it differs in the pubescent branchlets, pubescent winter-buds, in the pubescent usually bluish-green leaves, in the shorter stamens, the glandular pink corolla with broader lobes and wider tube.

RHODODENDRON SERRULATUM, *Millais, Rhodod.*, 241 (1917).

(Syn.: AZALEA SERRULATA, *Small.*)

HABIT: upright shrub to 20 ft. tall, with irregularly whorled branches; young shoots usually copiously strigose toward the apex and without villous pubescence, becoming soon bright red-brown, changing to dull brown or greyish the following year.

FLORAL WINTER-BUDS: ovoid, glabrous, with 15-20 ovate mucronate to mucronate-aristate scales usually light yellowish-brown with a sharply marked dark-brown band below the white-ciliolate margin.

LEAVES: deciduous, chartaceous at maturity, elliptic to obovate or obovate-oblong, rarely oblanceolate, 1½-3¼ in. long and ⅗-1½ in. wide, usually acute, rarely obtuse, mucronate, cuneate at base, serrulate-ciliate, glabrous above except sparingly short-villous on the midrib, glabrous beneath and strigose on the midrib, or the upper leaves of vigorous shoots soft-pubescent beneath and puberulous above; petiole ¼-⅙ in. long, strigose.

INFLORESCENCE: 6-10-flowered; flowers unfolding after the leaves are fully grown and the winter-buds at least partly formed, fragrant; pedicels ½-⅕ in. long, glandular-hirsute and sparingly villous.

CALYX: with semiorbicular to ovate lobes, rarely exceeding ¼ in., glandular-ciliate.

COROLLA: funnelform, white, the tube cylindric, slender, 1-1⅓ in. long and about ⅛ in wide, slightly dilated at apex and rather copiously glandular-pilose and sparingly villous outside, glabrous inside, the lobes ovate-lanceolate, ½-⅗ in. long, acuminate.

STAMENS: about 1½ times as long as tube, exceeding the lobes; filaments glabrous on the upper third, pubescent below.

PISTIL: much exceeding the stamens; ovary densely glandular-setose; style short-pubescent near base or glabrous, purple above.

CAPSULE: ovoid-oblong, about ½ in. long, minutely villous and densely glandular-setose.

HABITAT: south-eastern North America; Georgia to Florida and Louisiana.

Closely related to *R. viscosum*, but chiefly distinguished by the red-brown branchlets densely covered toward the end with strigose brown hairs, by the aristate or at least distinctly mucronate more numerous bud-scales, by the slender corolla-tube about twice as long as the small lobes and by the distinctly serrulate and firmer leaves. It varies with less strigose branchlets and leaves soft-pubescent beneath, f. *molliculum*, Rehd., and with silky-pubescent winter-buds, var. *georgianum*, Rehd.

RHODODENDRON SPECIOSUM, *Sweet, Hort. Brit.*, ed. 2, 343 (1830), not *Salisbury.*

(Syn.: R. FLAMMEUM, *Sarg.*, name only; AZALEA FULVA, *Michx.*, name only; A. SPECIOSA, *Willd.*; A. CALENDULACEA var. FLAMMEA, *Michx.*; A. NUDIFLORA, *Loisel.*, not *L.*)

ILLUSTRATION—Sims in *Bot. Mag.*, t. 180 (1792), as *A. nudiflora*, var. *coccinea.*

HABIT: much-branched shrub 1-6 ft. tall, with slender irregularly whorled branches; shoots finely pubescent and rather densely strigillose while young, becoming greyish-brown the second year.

FLORAL WINTER-BUDS: ovoid, glabrous, with 9-12 generally ovate ciliolate scales usually rounded and mucronate at apex.

LEAVES: deciduous, subchartaceous, obovate or elliptic to oblong, $1\frac{1}{4}$-$2\frac{1}{2}$ in. long and $\frac{1}{2}$-1 in. wide, acute or obtusish and mucronulate, broad-cuneate at base, setose-ciliate, strigillose above, finely pubescent beneath especially on the veins, often strigose on the midrib, sometimes nearly glabrous beneath except on the midrib, leaves of the shoots more densely pubescent than those of the branchlets; petiole $\frac{1}{8}$-$\frac{1}{5}$ in. long, pubescent and strigillose.

INFLORESCENCE: 6-15-flowered; flowers expanding with the leaves; pedicels $\frac{1}{4}$-$\frac{1}{2}$ in. long, strigillose, eglandular.

CALYX: with orbicular-ovate to oblong lobes $\frac{1}{24}$-$\frac{1}{8}$ in. long, pubescent outside or nearly glabrous.

COROLLA: funnelform, $1\frac{1}{2}$-2 in. across, scarlet or bright red, with large orange blotch, the tube cylindric, rather slender, clothed outside with fine villous pubescence and scattered pilose glandless hairs, pubescent inside, lobes ovate, abruptly acuminate, shorter than tube.

STAMENS: 5, much exserted, more than twice as long as tube; filaments pubescent below the middle.

PISTIL: slightly longer than stamens; ovary covered with setose-glandless hairs; style finely pubescent at the lower third, usually purplish above.

CAPSULE: ovoid to narrow-oblong, narrowed toward the apex, about 1 in. long, strigose.

HABITAT: eastern North America; Georgia and South Carolina.

A showy species closely related to *R. calendulaceum*, but differing chiefly in the longer cylindric corolla-tube finely pubescent and not glandular outside, in the always bright red or scarlet corolla and in the smaller and comparatively broader leaves.

RHODODENDRON VISCOSUM, *Torrey, Fl. U.S.*, 424 (1824).

(Syn.: AZALEA VISCOSA, *L.*; ANTHODENDRON VISCOSUM, *Reichenb.*)

ILLUSTRATIONS—Schmidt, *Oester. Baumz.*, vol. 3, t. 171 (1800); *Meehan's Monthly*, vol. 10, t. 6 (1900).

HABIT: much-branched upright shrub to 8, rarely 12 ft. tall, with irregularly whorled branches; young shoots clothed with hirsute or strigose loosely appressed, rarely spreading hairs, otherwise glabrous, greyish or yellowish-brown, rarely red-brown in autumn, older branches light greyish-brown.

FLORAL WINTER-BUDS: glabrous, sometimes pubescent, ovoid, usually brown, with 8-12 broadly ovate rounded scales usually mucronate, ciliolate, the basal sometimes long-pointed.

LEAVES: deciduous, thinly chartaceous, scattered, ovate or elliptic-obovate to oblong-oblanceolate, $\frac{3}{4}$-$1\frac{1}{2}$ in. long and $\frac{1}{3}$-$\frac{4}{5}$ in. wide, acute or rounded and mucronate, cuneate at base, glabrous except slightly villous on the midrib above and strigose beneath, sometimes strigillose above and usually dark green, lighter green or glaucescent beneath; petiole $\frac{1}{24}$-$\frac{1}{8}$ in. long, strigillose.

INFLORESCENCE: 4-9-flowered; flowers appearing after the leaves are fully developed and the winter-buds are formed; pedicels $\frac{1}{5}$-$\frac{1}{2}$ in. long, pubescent and glandular-hirsute.

CALYX: with unequal semiorbicular to ovate lobes, about $\frac{1}{24}$ in. long, setosely glandular-ciliate.

COROLLA: funnelform, white or suffused with pink, rarely deep pink (f. *rhodanthum*, Rehd.), about 1 in. across, the tube cylindric, $\frac{3}{4}$-1 in. long, about $1\frac{1}{2}$ times as long as the lobes, finely villous and glandular-hirsute, slightly pubescent inside above the middle, the lobes ovate-oblong, acuminate, about $\frac{3}{5}$ in. long, finely villous outside and stipitate-glandular along the middle.

STAMENS: exserted, somewhat longer than lobes, filaments villous except on the upper third.

PISTIL: exceeding the stamens; ovary glandular-setose or sometimes glandless; style finely pubescent below the middle, sometimes purplish toward the apex.

CAPSULE: oblong-ovoid, $\frac{1}{2}$-$\frac{4}{5}$ in. long, glandular-setose and finely pubescent or sometimes glandless.

HABITAT: eastern North America, from south-western Maine to South Carolina. In swamps, chiefly on the coastal plain.

A distinct species characterised by the strigose branchlets, the strigose but otherwise usually glabrous leaves, late appearing rather small white to pink fragrant flowers glandular-pubescent outside, and by the minute calyx. It varies with glaucous leaves, var. *glaucum*, Torr. (*R. glaucum*, Sweet): with narrower brighter green leaves, var. *nitidum*, A. Gray (*R. nitidum*, Torr.): with leaves pubescent beneath, var. *tomentosum*, Rehd.: with pubescent winter-buds, var. *montanum*, Rehd., and with hispid pedicels and branchlets, var. *hispidum*, Voss (*R. hispidum*, Torr.).

SUBSERIES NIPPONICUM

(Syn.: R. sect. Viscidula, *Matsum. & Nakai.*)

This subseries contains only one species and is characterised by the tubular-campanulate white corolla with short ovate suberect lobes about one-third as long as the tube and by the large pubescent generally obovate leaves. It is most closely related to the preceding subseries, but is easily distinguished by the tubular-campanulate corolla, a shape not found in any other species of the Azalea series. The species occurs only in central Japan.

RHODODENDRON NIPPONICUM, *Matsumura* in *Tokyo Bot. Mag.*, vol. 13, 17 (1899).

Illustration—Nakai, *Trees & Shrubs Jap.*, ed. 2, vol. 1, 78 (1927).

Habit: upright bushy shrub 3-6 ft. tall, with rigid red-brown branches clothed with pilose and glandular hairs when young, older branches and stems with papery cinnamon-brown bark shredding and exposing the inner lustrous brown bark.

Floral Winter-buds: large, ovoid, with 6-9 outer mucronulate scales straw-coloured and flushed purple, glabrous except ciliolate.

Leaves: deciduous, membranous, scattered, subsessile, obovate to obovate-oblong, 2-7 in. long and 1½-3½ in. wide, rounded or truncate at apex and usually emarginate, cuneate at base, ciliate, appressed-pilose on both sides, reticulate beneath, changing in autumn to orange and crimson; petiole nearly wanting, with decurrent base leaving a scar much longer than wide and pointed at the lower end.

Inflorescence: 6-15-flowered; flowers expanding with or after the leaves; pedicels slender, nodding, ½-¾ in. long, densely glandular-pilose and viscid.

Calyx: small, with short unequal lobes, glandular-pubescent.

Corolla: tubular or tubular-campanulate, about ¾ in. long and ⅓ in. broad, white, with 5 short suborbicular slightly-spreading lobes, glabrous.

Stamens: 10, included, unequal; filaments puberulous below the middle.

Pistil: shorter than corolla; ovary glandular-pilose; style glabrous, nearly straight, with capitate stigma.

Capsule: pendent, ovoid, about ½ in. long; walls thin, with wavy margin.

Habitat: central Japan, in the mountains.

A very distinct species unique in the Azalea series on account of its tubular or tubular-campanulate flowers with included style and stamens. The large leaves resemble those of *R. Schlippenbachii*, Maxim.

Rhododendron nipponicum, *Matsumura.*

A. Flowering shoot. B. Opened corolla showing pistil and stamens. C. Pistil. D. Stamen. E. Anther. F. Ovary. G. Fruit.

AZALEA SERIES

SUBSERIES OBTUSUM

(Syn.: Tsutsutsi, *Adans.*; R. sect. Tsutsutsi, *G. Don*; R. subgen. Tsutsia, *Planch.*; Azalea subgen. Tsutsutsi, *K. Koch.*)

General Description:—Much-branched, mostly rather low shrubs. Shoots densely or sparsely clothed with appressed flattened red-brown hairs, sometimes also with spreading soft hairs. Leaves persistent or deciduous, usually dimorphic, medium-sized or small, densely or sparsely clothed with strigose hairs, rarely nearly glabrous. Flowers one or few, from a terminal bud, with leafy shoots from the axils of the lower scales of the same bud. Corolla campanulate-funnelform or funnelform with cylindric tube, 5-lobed, glabrous outside. Stamens 5-10, rarely 4, or 12, equal or unequal, never declinate, with the filaments pubescent or puberulous below the middle. Ovary strigose, sometimes glandular. Fruit conic or conic-ovoid, strigose-villous or glabrescent, 5-celled.

Distribution:—About 29 species in the temperate regions of eastern Asia from Korea and central Japan to the Philippine Islands, Annam and south-western China.

This is a well-marked group chiefly characterised by the flattened appressed bristle-like hairs of the shoots and the usually evergreen or half-evergreen leaves and by the presence of leafy shoots in the axils of the lower scales of the terminal flower-buds. The latter character the group shares with the subseries Schlippenbachii, which, however, differs in the absence of bristle-like flattened hairs and in the deciduous leaves which are never dimorphic, as they are in the deciduous-leaved species of the subseries Obtusum where the larger spring leaves are deciduous, while the smaller and more coriaceous summer leaves, at least those below the terminal bud, persist during the winter. The corolla varies from white to rose, purple or red, and is usually spotted, never yellow nor with yellow or orange blotch. Some species of this subseries have a general resemblance to species of the Triflorum series, but the leaves lack the scaly dots of that series.

AZALEA SERIES

SUBSERIES OBTUSUM

KEY TO THE SPECIES

A. Bud-scales not viscid; shoots densely clothed with appressed flattened hairs:
  B. Corolla funnelform-campanulate:
    C. Stamens 5 (5-10 in *R. tosaense* and in a form of *R. obtusum*):
      D. Style and filaments villous . . . . **Sasakii.**
      DD. Style and filaments glabrous or nearly so, or filaments glandular below:
        E. Leaves oval or obovate to lanceolate:
          F. Leaves more than $\frac{1}{2}$ in. long, at least pubescent on the midrib beneath:
            G. Calyx-lobes oblong to oblong-obovate **breviperulatum.**
            GG. Calyx-lobes oval or ovate . . . **obtusum.**
          FF. Leaves less than $\frac{1}{2}$ in. long, glabrous beneath except a few brown hairs on the midrib . **serpyllifolium.**
        EE. Leaves linear-lanceolate to lanceolate or oblanceolate:
          F. Leaves entire; flowers lilac-purple, about 1 in. across **tosaense.**
          FF. Leaves crenate-serrulate; flowers red to rose-red, about 2 in. across . . . . **indicum.**
    CC. Stamens 7-10:
      D. Style hairy at base:
        E. Leaves narrow-lanceolate to oblanceolate, crenate-serrulate; stamens 10 . . . . **Kanehirai.**
        EE. Leaves oval to obovate or lanceolate, entire; stamens 7-10:
          F. Leaves acute, elliptic-ovate to elliptic-oblong, often widest below the middle:
            G. Flowers lilac to magenta . . . **subsessile.**
            GG. Flowers pink . . . . **rubropilosum.**
          FF. Leaves abruptly mucronulate, obovate to obovate-oblong, conspicuously dimorphic, $\frac{4}{5}$-$1\frac{3}{4}$ in. long **lasiostylum.**
      DD. Style glabrous:
        E. Leaves narrowly oblong-lanceolate to linear-lanceolate:
          F. Corolla about $1\frac{3}{4}$ in. long; leaves strigose above and below or glabrescent at maturity above, up to $2\frac{1}{2}$ in. long . . . . . **annamense.**

FF. Corolla about $1\frac{1}{4}$ in. long; leaves glabrous above, glaucescent beneath and nearly glabrous, up to $1\frac{1}{2}$ in. long . . . . . **hainanense.**

EE. Leaves elliptic or oval to oblong or ovate-lanceolate:

F. Stamens shorter than corolla; leaves elliptic to obovate or oblong-obovate, broadest above or about the middle, not exceeding $\frac{3}{4}$ in.:

G. Corolla about $\frac{4}{5}$ in. long; leaves above with hirsute hairs bulbous at base, beneath with few scattered strigose hairs, less than $\frac{1}{2}$ in. long . **Nakaharai.**

GG. Corolla about $1\frac{1}{4}$ in. long; leaves on both sides with appressed strigose hairs, not bulbous at base **longiperulatum.**

FF. Stamens about as long as corolla; leaves elliptic to elliptic-oblong or ovate-lanceolate, often broadest at base:

G. Corolla $1\frac{1}{2}$-2 in. long, the tube gradually dilated; leaves acute or obtusish, rarely somewhat acuminate, generally elliptic . . . . . **Simsii.**

GG. Corolla about $1\frac{1}{4}$ in. long, with short cylindric tube; leaves distinctly acuminate, ovate-elliptic to ovate-lanceolate . . . . . **atrovirens.**

BB. Corolla with short, rarely long, cylindric tube and spreading lobes; stamens 5, rarely 4:

C. Style glabrous; corolla glabrous:

D. Leaves deciduous, often 3-nerved; corolla white, 4-5-lobed . . . . . **Tschonoskii.**

DD. Leaves persistent; corolla 5-lobed:

E. Corolla rose-purple to nearly white, its tube $\frac{1}{5}$ to $\frac{1}{3}$ in. long; leaves not conspicuously dimorphic, $\frac{1}{2}$ to $1\frac{1}{2}$ in. long . . . . . **microphyton.**

EE. Corolla lilac, its tube nearly $\frac{1}{2}$ in. long; leaves conspicuously dimorphic, $1\frac{1}{4}$-$3\frac{1}{2}$ in. long . **Mariae.**

CC. Style pilose at base; corolla white to rose-colour, the tube appressed-setose outside; leaves to $2\frac{1}{2}$ in. long, usually acuminate . . . . **Seniavinii.**

AA. Bud-scales viscid; corolla wide-funnelform; style glabrous; calyx-lobes green, ample:

B. Shoots densely clothed with flattened appressed hairs; leaves conspicuously dimorphic; stamens 10:

C. Flowers rose to scarlet or purple; calyx-lobes oval to lanceolate:

D. Leaves persistent; calyx-lobes glandular-ciliate:

E. Corolla scarlet to rose-red; calyx-lobes oval to lanceolate; leaves subcrenulate . . . **scabrum.**

EE. Corolla rose-purple to magenta; calyx-lobes lanceolate; leaves entire . . . . **pulchrum.**

DD. Leaves deciduous or semipersistent, obscurely crenulate-serrulate; calyx-lobes lanceolate, glandless; corolla rose to rose-purple, often double . . **yedoense.**

CC. Flowers white: calyx-lobes minute . . **boninense.**

BB. Shoots with few appressed flattened hairs and many spreading pilose often glandular hairs:

C. Stamens 8-10; leaves persistent or subpersistent, not conspicuously dimorphic:

D. Corolla about $\frac{3}{4}$ in. long, red; shoots without glandular hairs . . . . . **rufo-hirtum.**

DD. Corolla $1\frac{1}{2}$-$2\frac{1}{2}$ in. long; shoots often with glandular hairs:

E. Leaves clothed with spreading glandular red-brown hairs; corolla red . . . . . **Oldhamii.**

EE. Leaves with appressed grey to rufous hairs, sometimes glandular; corolla white to pale purple **mucronatum.**

CC. Stamens 5 (6-10 in a form of *R. linearifolium*); shoots with partly gland-tipped hairs:

D. Ovary rufous-setose, glandless; leaves persistent, ovate-lanceolate, acuminate . . . . **rivulare.**

DD. Ovary glandular-setose; leaves deciduous, dimorphic, ovate-elliptic to linear-lanceolate, acute or short-acuminate . . . . . **linearifolium.**

RHODODENDRON ANNAMENSE, *Rehder* in *Jour. Arnold Arb.*, vol. 10, 182 (1929).

HABIT: shrub with erect subverticillate branches; shoots densely clothed with appressed flattened fulvous hairs, older branches brownish-grey.

FLORAL WINTER-BUDS: with several broad-ovate abruptly acuminulate ciliate scales, minutely puberulous and strigose along the middle.

LEAVES: persistent, chartaceous, narrowly oblong-lanceolate, to oblanceolate, 1-2½ in. long and ¼-⅓ in. wide, acute or short-acuminate, narrowly cuneate at base, at first on both sides densely clothed with appressed fulvous hairs, at maturity more sparsely strigose, above sometimes glabrescent or furnished with grey hairs, dark green and slightly rugulose, the midrib not impressed, beneath pale green, fairly densely strigose, more densely on the midrib; petiole ⅛-¼ in. long, flattened above, densely strigose.

INFLORESCENCE: 1-2-flowered; pedicels about ⅓ in. long, densely clothed with short flattened appressed hairs.

SEPALS: unequal, ovate-oblong to oblong, ⅛-⅕ in. long, obtuse, outside densely clothed with long strigose brown hairs.

COROLLA: campanulate-funnelform, about 1½ in. long, apparently rose-purple and not dotted, the wide tube about ¾ in. long and gradually dilated from the base, inside slightly papillose, glabrous outside, the lobes oval, nearly 1 in. long.

STAMENS: 10, unequal, nearly straight, the longer as long as corolla; filaments pilose below the middle and flattened toward the base.

PISTIL: exceeding the corolla; ovary densely strigose; style nearly straight, glabrous.

HABITAT: Annam.

Most nearly related to *R. hainanense*, Merr., which differs chiefly in the much smaller flowers, smaller leaves, at maturity glabrous above, glaucescent beneath and glabrous or nearly glabrous except the midrib. The corolla resembles that of *R. scabrum*, G. Don, but is somewhat smaller. The species marks the southern limit of the Azalea series.

RHODODENDRON ATROVIRENS, *Franchet* in *Bull. Soc. Bot. France*, vol. 33, 235 (1886).

HABIT: large shrub or small tree; shoots densely clothed with appressed flattened brown hairs.

FLORAL WINTER-BUDS: ovoid, with about 10 mucronate scales densely setose along the middle and ciliate.

LEAVES: persistent, chartaceous, lanceolate or ovate-lanceolate, 1-3 in. long and $\frac{1}{2}$-$1\frac{1}{6}$ in. wide, long-acuminate and mucronate, at first densely clothed on both surfaces with appressed shining brown hairs, later glabrescent above except the midrib and dark dull green, paler beneath and clothed with appressed brown or grey-brown hairs, densely so on the midrib and veins, more sparsely on the surface; petiole $\frac{1}{12}$-$\frac{1}{4}$ in. long, strigose.

INFLORESCENCE: 2-4-flowered; pedicels about $\frac{1}{4}$ in. long, densely clothed with appressed flattened shining brown hairs.

CALYX: small, with deltoid short lobes, pubescent like the pedicels.

COROLLA: funnelform, 1-$1\frac{1}{2}$ in. across and $1\frac{1}{4}$ in. long, with cylindric tube abruptly enlarged at apex and about $\frac{1}{3}$ in. long, and with spreading oblong obtuse lobes, red, with scattered dark-red spots at the base of the upper lobes, glabrous.

STAMENS: 10, unequal, the longest about as long as corolla, short-pilose below the middle.

PISTIL: exceeding the stamens; ovary densely covered with appressed flattened shining brown hairs; style glabrous.

HABITAT: Yunnan.

This little known species is quite distinct on account of its long-acuminate leaves; the flowers described as scarcely an inch long are according to a co-type specimen and another specimen from the type locality about $1\frac{1}{2}$ in. across, and appear to be light-coloured with dark dots.

RHODODENDRON BONINENSE, *Nakai* in *Tokyo Bot. Mag.*, vol. 34 (324) (1920), name only; vol. 35, 152 (1921).

HABIT: much-branched shrub, wide-spreading, to 6 ft. tall; shoots densely clothed with appressed flattened rufous hairs.

FLORAL WINTER-BUDS: ovoid, the outer scales clothed along the middle with appressed rufous hairs and ciliate, the inner villous, glandular and viscid on the inner surface.

LEAVES: persistent, chartaceous, oblong-oblanceolate to oblong-lanceolate, 1-1¾ in. long and ⅓-½ in. wide, subacute and mucronulate, cuneate at base, dark green above, with impressed veins, clothed above sparsely and beneath densely with appressed straight rufous hairs; petiole ⅕-⅓ in. long, channelled above, densely clothed with appressed rufous hairs.

INFLORESCENCE: 4-6-flowered; pedicels ⅕-⅖ in. long, densely clothed with appressed rufous hairs and subtended by the subpersistent bud-scales.

CALYX: with 5 minute acute or rounded teeth, clothed with appressed rufous hairs.

COROLLA: funnelform-campanulate, 1¾-2 in. long and as wide, white, with obovate or spatulate, upright spreading rounded lobes.

STAMENS: 10, shorter than corolla, filaments papillose below the middle; anthers pale, broad-ovoid.

PISTIL: nearly as long as corolla, exceeding the stamens; ovary densely clothed with appressed strigose hairs; style pilose below the middle.

CAPSULE: oblong-ovoid, ½-¾ in. long, densely clothed with grey-brown hairs, on stout pedicels.

HABITAT: Bonin Islands.

A well-marked species characterised by its large white flowers, the small glandless calyx, the homomorphic leaves and the shaggy rufous-grey pubescence of the shoots and petioles.

RHODODENDRON BREVIPERULATUM, *Hayata, Icon. Pl. Formos.*, vol. 3, 129 (1914).

ILLUSTRATION—Kanehira, *Formos. Trees*, 318 (1917), leaf only.

HABIT : much-branched shrub ; young shoots slender, clothed with appressed flattened shining brown hairs.

FLORAL WINTER-BUDS : scales several, ovate, strigose along the middle, otherwise glabrous.

LEAVES: persistent, chartaceous, scattered and partly clustered, ovate-elliptic to oblong-obovate, about 1 in. long and $\frac{2}{5}$-$\frac{3}{5}$ in. wide, obtuse and mucronulate, broad-cuneate to rounded at base, clothed with scattered appressed pilose shining brown hairs changing to grey, reticulate beneath, midrib impressed above ; petiole $\frac{1}{8}$-$\frac{1}{5}$ in. long.

INFLORESCENCE : 3- to several-flowered ; pedicels $\frac{1}{6}$-$\frac{1}{4}$ in. long, clothed like the calyx and ovary with flattened shining brown hairs.

CALYX : minute, with 5 ovate ciliate lobes, less than $\frac{1}{12}$ in. long.

COROLLA : funnelform, about $\frac{3}{4}$ in. long, 5-lobed.

STAMENS : 5, shorter than corolla ; filaments flattened, glabrous or nearly so ; anthers oblong, apiculate at base.

PISTIL : exceeding the stamens ; ovary conic, densely pilose ; style glabrous except at the extreme base, dilated below the capitate stigma.

HABITAT : Formosa, mountains of Nanto and Giran prefectures.

An imperfectly known species ; not yet introduced.

RHODODENDRON HAINANENSE, *Merrill* in *Philip. Jour. Sci.*, vol. 21, 350 (1922).

Habit : shrub with many erect twiggy branches ; shoots clothed with appressed flattened brown hairs.

Floral Winter-buds : oblong-ovoid, the outer scales glabrous except setose along the middle chiefly toward the apex and ciliate.

Leaves : subcoriaceous, subpersistent, linear-lanceolate, $\frac{3}{4}$-$1\frac{1}{2}$ in. long and $\frac{1}{8}$-$\frac{3}{8}$ in. broad, acute and mucronate, cuneate at base, dark green and glabrescent above with the midrib and secondary veins impressed, glaucescent beneath with prominent midrib and veins and a few scattered strigose hairs ; petiole $\frac{1}{8}$-$\frac{1}{5}$ in. long, flattened and clothed with appressed grey-brown hairs.

Inflorescence : 1-3-flowered ; pedicels $\frac{1}{5}$-$\frac{3}{5}$ in. long, densely clothed with appressed strigose hairs.

Calyx : with ovate-lanceolate lobes, $\frac{1}{8}$-$\frac{1}{5}$ in. long, rounded or acuminate, densely pilose and ciliate.

Corolla : funnelform, $1\frac{1}{4}$-$1\frac{1}{2}$ in. long and 1-$1\frac{1}{2}$ in. broad, red, deeply 5-lobed, with spreading obtuse or acute lobes.

Stamens : 10, unequal, shorter than the corolla ; filaments pilose below the middle.

Pistil : exceeding the stamens ; ovary densely setose-pilose ; style glabrous with capitate stigma.

Capsule : ovoid, $\frac{1}{4}$ in. long, glabrescent.

Habitat : eastern China, Hainan.

A very distinct species characterised by its linear-lanceolate leaves glaucescent beneath. It is related to *R. Nakaharai*, Hay., which has small usually elliptic leaves pilose and rough above. It is also similar to *R. Kanchirai*, Wils., which has dimorphic obscurely crenate-serrulate leaves and the style villous at base. Not yet in cultivation.

RHODODENDRON INDICUM, *Sweet, Brit. Fl. Gard.*, ser 2, vol. 2, in text of t. 128 (1833).

(Syn.: R. DECUMBENS, *D. Don.*; R. BREYNII, *Planch.*; R. DANIELSIANUM, *Planch.*; R. LATERITIUM, *Planch.*; R. HANNOENSE, *Nakai*; R. HAGNOENSE, *Wils.*, as synon.; AZALEA INDICA, *L.*; A. MACRANTHA, *Bge.*)

ILLUSTRATION—Lindley in *Bot. Reg.*, vol. 20, t. 1700 (1834), as *A. indica lateritia.*

HABIT: densely-branched shrub, to 6 ft. tall, but usually low and sometimes prostrate; branches slender, but rigid and clothed with flattened appressed chestnut-brown hairs.

FLORAL WINTER-BUDS: ovoid, pointed, with several scales, the outer ciliate but otherwise glabrous or with a tuft of brown hairs at the apex.

LEAVES: crowded, persistent, subcoriaceous, narrow-lanceolate or lanceolate to oblanceolate, $\frac{3}{4}$-1$\frac{1}{2}$ in. long and $\frac{1}{8}$-$\frac{2}{5}$ in. wide, acute at the ends, usually remotely crenate-serrulate and ciliolate, with scattered closely appressed red-brown hairs on both sides, changing in autumn to crimson or vinous-purple; petiole $\frac{1}{4}$-$\frac{1}{8}$ in. long, densely clothed with appressed chestnut-brown hairs.

INFLORESCENCE: 1-2-flowered; pedicels $\frac{1}{8}$-$\frac{1}{5}$ in. long, clothed with strigose brown hairs, hidden by the scales.

CALYX: with oval or suborbicular obtuse lobes densely strigose and ciliate.

COROLLA: broad-funnelform, 2-2$\frac{1}{2}$ in. across, bright red to scarlet, sometimes rose-red, with oval rounded lobes.

STAMENS: 5, about as long or slightly longer than corolla; filaments glabrous.

PISTIL: exceeding the stamens; ovary densely clothed with appressed shining brown hairs; style glabrous.

CAPSULE: oblong-ovoid, about $\frac{1}{4}$ in. long, densely strigose.

HABITAT: southern Japan.

A distinct species chiefly characterised by its small and narrow subcoriaceous crenulate leaves and the bright-red flowers with 5 stamens. A form with double salmon-red flowers is f. *balsaminaeflorum*, Nichols (*Azalea rosaeflora*, R. Dean; *A. Rollissonii*, Th. Moore; Illustration—*Garden*, vol. 18, 254, t. 249). A form which has thicker leaves and the lobes of the corolla wavy is var. *crispiflorum*, Schneid. (*Azalea crispiflora*, Hook. Illustration—*Bot. Mag.*, t. 4726). The *Azalea indica* of the trade is not this species but *R. Simsii* and related forms.

RHODODENDRON KANEHIRAI, *Wilson* in *Wilson & Rehder, Monog. Azal.*, 28 (1921).

HABIT: much-branched dense shrub to 8 ft. tall; branches slender, clothed with appressed flattened chestnut-brown hairs.

FLORAL WINTER-BUDS: ovoid, with several acuminate scales, setose along the middle and ciliate, otherwise glabrous.

LEAVES: persistent, dimorphic; spring leaves linear-lanceolate to oblong-lanceolate, $\frac{3}{4}$-2 in. long and $\frac{1}{5}$-$\frac{3}{5}$ in. wide, acute and mucronate, attenuate at base, obscurely crenate-serrulate, dark green above, pale beneath, clothed on both sides with shining brown strigose hairs; summer leaves linear-oblanceolate to narrow-obovate, $\frac{3}{5}$-2$\frac{1}{4}$ in. long and $\frac{1}{12}$-$\frac{1}{4}$ in. wide, acute or rounded at apex, otherwise like the spring leaves; petiole $\frac{1}{24}$-$\frac{1}{5}$ in. long, densely clothed with appressed setose hairs.

INFLORESCENCE: 1-2-flowered; pedicels upright, $\frac{1}{8}$-$\frac{1}{4}$ in. long, densely clothed with appressed chestnut-brown hairs.

CALYX: usually well developed with upright green oval or rounded lobes $\frac{1}{24}$-$\frac{1}{5}$ in. long and $\frac{1}{24}$-$\frac{1}{12}$ in. wide, with appressed shining chestnut-brown hairs.

COROLLA: narrow funnelform, 1$\frac{1}{4}$-1$\frac{3}{4}$ in. long, and $\frac{4}{5}$-1 in. across, carmine-red to scarlet, glabrous, with ovate or oval rounded lobes.

STAMENS: 10, unequal, shorter than corolla; filaments pubescent below the middle.

PISTIL: about as long as corolla; ovary densely clothed with grey or chestnut-brown strigose hairs; style with few appressed strigose hairs near base.

CAPSULE: cylindric-oblong, about $\frac{1}{4}$ in. long, setose.

HABITAT: Formosa, province Taihoku.

Closely related to *R. indicum*, but easily distinguished by its smaller flowers with 10 stamens. Apparently not yet introduced.

RHODODENDRON LASIOSTYLUM, *Hayata*, *Icon. Pl. Formos.*, vol. 3, 135 (1913).

HABIT: upright much-branched shrub about 3 ft. tall; young shoots clothed with short appressed flattened brown or grey-brown hairs.

FLORAL WINTER-BUDS: ovoid, outer scales glabrous except strigose hairs along the middle toward the apex and the sparingly ciliate margin.

LEAVES: deciduous or subpersistent, dimorphic; spring leaves lanceolate to ovate-lanceolate, $\frac{3}{4}$-$1\frac{3}{4}$ in. long, and $\frac{2}{5}$-$\frac{3}{5}$ in. broad, acute, clothed on both sides with appressed grey to rufous-brown hairs like the summer leaves which are oblong-obovate to oblanceolate, $\frac{3}{4}$-$1\frac{3}{4}$ in. long, and $\frac{2}{5}$-$\frac{1}{2}$ in. wide, rounded and mucronate at the apex, cuneate at base; petiole $\frac{1}{8}$-$\frac{1}{3}$ in. long, densely greyish strigose, flattened above.

INFLORESCENCE: 2-4-flowered; pedicels $\frac{1}{5}$-$\frac{2}{5}$ in. long, densely clothed with short strigose brown hairs.

CALYX: with oblong lobes, $\frac{1}{12}$-$\frac{1}{8}$ in. long, densely clothed with strigose brown rather long hairs.

COROLLA: funnelform, about $\frac{4}{5}$ in. long and about 1 in. across, pink, with spreading lobes, tube about $\frac{1}{3}$ in. long.

STAMENS: 10, unequal, as long as the corolla lobes, papillose below the middle.

PISTIL: exceeding the stamens; ovary densely covered with brown strigose hairs; style with long pale brown hairs at base.

CAPSULE: cylindric-ovoid, $\frac{1}{3}$ in. long, densely strigose.

HABITAT: Formosa, province Nanto.

Related to *R. rubropilosum*, Hay., but differing chiefly in the dimorphic larger leaves broadest above the middle, the oblong larger calyx-lobes and in the stamens being about as long as the corolla. Not yet in cultivation.

RHODODENDRON LINEARIFOLIUM, *Siebold & Zuccarini* in *Abh. Akad. Münch.*, vol. 4, pt. 3, 131 (*Fam. Fl. Jap. Nat.*, vol. 2, 7) (1846).

(Syn.: AZALEA LINEARIFOLIA, *Hook.*)

ILLUSTRATION—Hooker, f. in *Bot. Mag.*, t. 5769 (1869).

A monstrous garden form of the following variety with linear or linear-lanceolate leaves, 1½-3 in. long and ½-¼ in. wide, and a pink corolla deeply divided into linear-lanceolate segments. Cultivated in Japan.

RHODODENDRON LINEARIFOLIUM, var. **MACROSEPALUM**, *Makino* in *Tokyo Bot. Mag.*, vol. 27, 108 (1913).

(Syn.: R. MACROSEPALUM, *Maxim.*; AZALEA MACROSEPALA, *K. Koch.*)

ILLUSTRATION—Maximowicz in *Gartenfl.*, vol. 19, t. 662 (1870).

HABIT: loosely branched and usually low shrub, 1-3 ft. tall, rarely to 8 or 10 ft.; shoots clothed densely with greyish pilose hairs partly gland-tipped and a few flattened spreading hairs.

FLORAL WINTER-BUDS: ovoid, with about 10 scales, the outer densely covered with strigose yellow-brown hairs, the inner viscid.

LEAVES: mostly deciduous, dimorphic; spring leaves membranous, partly scattered and partly clustered, ovate-elliptic or ovate to lanceolate, acute or short-acuminate, mucronate, cuneate at base, 1-2½ in. long and ⅓-1 in. wide, dull green and sparingly glandular-hairy above, slightly rugulose and somewhat rough, clothed beneath with soft spreading grey to grey-brown glandular hairs, changing in autumn to rich crimson-purple; summer leaves oblanceolate to oblong-oblanceolate, obtuse and mucronulate, of firmer texture; petiole ½-¼ in. long, densely pilose.

INFLORESCENCE: 2-10-flowered; pedicels ½-1¼ in. long, clothed with long spreading partly glandular hairs.

CALYX: green, its lobes lanceolate, ½-1¼ in. long, sometimes longer than the corolla, glandular-pubescent.

COROLLA: broad-funnelform, 1½-2 in. across, lilac-pink to rose-purple, fragrant, glabrous outside, with dark purple dots on the upper lobe, the lobes oval to broad-oblong; corolla double in f. *dianthiflorum*, Wils. (*Azalea dianthiflora*, Carr.).

STAMENS: 5, slightly shorter than the corolla, sometimes 6-10 in f. *decandrum*, Wils. (*R. hortense*, Nakai); filaments pubescent below the middle.

PISTIL: longer or as long as corolla; ovary glandular-setose; style glabrous.

CAPSULE: narrow-ovoid, ⅓-½ in. long, subtended by the persistent reflexed calyx-lobes.

HABITAT: central and southern Japan.

A distinct species characterised by the long spreading glandular-pilose pubescence, the large calyx-lobes and comparatively small corolla with normally 5 stamens.

RHODODENDRON LONGIPERULATUM, *Hayata, Icon. Pl. Formos.*, vol. 3, 138 (1913).

ILLUSTRATION—Kanehira, *Formos. Trees*, 319, fig. 13 (1917), leaf only.

HABIT: much-branched twiggy shrub; shoots densely clothed with appressed flattened chestnut-brown hairs.

FLORAL WINTER-BUDS: ovoid, with several outer scales sparingly strigose along the middle and slightly ciliate, otherwise glabrous.

LEAVES: scattered, chartaceous, subpersistent, ovate to ovate-lanceolate, $\frac{1}{2}$-$\frac{3}{4}$ in. long and $\frac{1}{5}$-$\frac{2}{5}$ in. wide, acute and mucronate, cuneate at base, obscurely crenulate and ciliate, dark green above, pale green below, with scattered strigose rufous hairs on both sides, midrib not or slightly impressed above, slightly raised below, veins obsolete above, slightly impressed beneath; petiole $\frac{1}{24}$-$\frac{1}{12}$ in. long, strigose.

INFLORESCENCE: 2-3-flowered; pedicels stout, about $\frac{1}{2}$ in. long, densely clothed with appressed shining rufous hairs.

CALYX: with acute lobes $\frac{1}{12}$ in. long or slightly longer, densely clothed with strigose long rufous hairs.

COROLLA: campanulate-funnelform, about $1\frac{1}{4}$ in. long and broad, red, deeply 5-lobed, with spreading obtuse lobes.

STAMENS: 10, unequal, slightly shorter than corolla; filaments papillose below the middle; anthers dark coloured.

PISTIL: exceeding the stamens, about as long as corolla; ovary densely clothed with strigose shining rufous hairs; style glabrous or nearly so.

CAPSULE: ovoid-oblong, nearly $\frac{1}{3}$ in. long, strigose.

HABITAT: Formosa, province Taihoku.

Related to *R. Kanehirai*, which has longer and narrower more crowded leaves and larger flowers with the style hairy at base. Not yet introduced.

RHODODENDRON MARIAE, *Hance* in *Jour. Bot.*, vol. 20, 230 (1882).

HABIT: a twiggy shrub 3-10 ft. tall; shoots clothed with appressed flattened reddish grey hairs changing to grey and persisting for several years.

FLORAL WINTER-BUDS: not seen, probably like those of *R. Seniavinii*.

LEAVES: persistent, coriaceous, dimorphic, clustered at end of the branchlets; spring leaves elliptic-lanceolate, $1\frac{1}{4}$-$3\frac{1}{2}$ in. long and $\frac{3}{4}$-$1\frac{1}{4}$ in. wide, acute and mucronulate, cuneate at base, shining and dark green and nearly glabrous above and with impressed veins, pale beneath, with raised veins and few scattered appressed rufous hairs; summer leaves elliptic to obovate, $\frac{1}{2}$-$1\frac{1}{4}$ in. long and $\frac{1}{5}$-$\frac{3}{5}$ in. wide, obtuse or rounded and mucronulate; petiole $\frac{1}{6}$-$\frac{1}{3}$ in. long, densely strigose.

INFLORESCENCE: 7-12-flowered; pedicels $\frac{1}{4}$-$\frac{2}{5}$ in. long, densely clothed with appressed, shining rufous-brown hairs.

CALYX: minute, densely clothed with shining rufous-brown hairs.

COROLLA: funnelform, $\frac{3}{4}$ in. across, lilac, fragrant, with a slender tube about $\frac{2}{5}$ in. long and oblong spreading acutish lobes, glabrous.

STAMENS: 5, exserted; filaments glabrous.

PISTIL: exceeding the stamens; ovary densely clothed with shining rufous-brown hairs; style glabrous, with capitate stigma.

HABITAT: eastern China, province Kwangtung.

Related to *R. Seniavinii*, which has less coriaceous leaves not rugulose above and smaller white flowers with shorter tube and pilose style. Not yet introduced.

RHODODENDRON MICROPHYTUM, *Franchet.*

A. Flowering shoot. B. Stamen. C. Pistil. D. Anther. E. Ovary. F. Fruit.

RHODODENDRON MICROPHYTUM, *Franchet* in *Bull. Soc. Bot. France*, vol. 33, 235 (1886).

ILLUSTRATION—

HABIT: upright much-branched shrub 1-6 ft. tall; shoots densely clothed with appressed flattened red-brown hairs.

FLORAL WINTER-BUDS: broad-ovoid, with 7-10 ciliolate scales and with a tuft of fulvous hairs at the apex, otherwise glabrous.

LEAVES: persistent, crowded, elliptic to lanceolate, $\frac{1}{5}$-$1\frac{1}{2}$ in. long and $\frac{1}{6}$-$\frac{3}{5}$ in. broad, acute or obtuse and mucronulate, cuneate at base, dark green above, pale below and with scattered appressed red-brown hairs, with scattered hairs on the midrib on both sides; petiole $\frac{1}{12}$-$\frac{1}{6}$ in. long, densely brown-strigose.

INFLORESCENCE: 3-6-flowered, often with smaller axillary heads directly below the terminal one; pedicels $\frac{1}{8}$-$\frac{1}{4}$ in. long, clothed with shining chestnut-brown hairs.

CALYX: with lanceolate lobes $\frac{1}{24}$-$\frac{1}{6}$ in. long or minute, clothed with long lustrous brown hairs.

COROLLA: funnelform, $\frac{1}{2}$-$\frac{4}{5}$ in. across, rose-coloured to nearly white and flushed pink, dotted carmine or crimson on the three upper lobes, with cylindric tube $\frac{1}{5}$-$\frac{1}{3}$ in. long and with spreading lobes.

STAMENS: 5, longer than the corolla; filaments sparingly pilose below the middle.

PISTIL: not or slightly exceeding the stamens; ovary densely clothed with shining chestnut-brown hairs; style glabrous.

HABITAT: western China, province Yunnan. At 6000-10,000 ft. altitude.

A distinct and floriferous species, often with several heads at the end of the branchlets forming a many-flowered cluster. Resembling some species of the Triflorum series, but easily distinguished by the absence of scales on the leaves and the presence of appressed flattened hairs.

RHODODENDRON MUCRONATUM, *G. Don*, *Gen. Syst.*, vol. 3, 846 (1834).

(Syn.: R. LEUCANTHUM, *Bge.*; R. LEDIFOLIUM, *G. Don*; R. BURMANNI, *G. Don*; R. ROSMARINIFOLIUM, *Dipp.*, not *Vidal.*; AZALEA ROSMARINIFOLIA, *Burm.*; A. MUCRONATA, *Bl.*; A. LEDIFOLIA, *Hook.*)

ILLUSTRATION—Hooker in *Bot. Mag.*, t. 2901 (1829).

HABIT: much-branched wide-spreading shrub 3-6, or sometimes to 10 ft. tall; shoots densely clothed with spreading grey to grey-brown soft hairs intermixed with few or many loosely appressed flattened and occasionally with glandular hairs.

FLORAL WINTER-BUDS: ovoid, the outer scales with strigose hairs along the middle, the inner viscid.

LEAVES: partly persistent, dimorphic; spring leaves deciduous, membranous, lanceolate to ovate-lanceolate, 1¼-2¼ in. long and ⅖-1 in. wide, acute or obtuse and mucronulate, cuneate at base, light green, clothed on both surfaces with appressed straight and soft grey to rufous hairs; summer leaves persistent, chartaceous, oblong-lanceolate to oblong-oblanceolate, ⅖-1½ in. long and ¼-½ in. wide, obtuse to rounded and mucronate, dark green, recurved at the margin, pubescent like the spring leaves and often glandular; petiole $\frac{1}{12}$-¼ in. long, densely clothed with soft spreading and flattened bristle-like hairs.

INFLORESCENCE: 1-3-flowered; pedicels ⅕-⅖ in. long, clothed with soft spreading hairs mixed with flattened hairs and occasionally with glandular hairs.

CALYX: green, with lanceolate lobes about ½ in. long and often slightly erose, glandular-pubescent.

COROLLA: wide-funnelform, 1½-2 in. across and as long, pure white, fragrant, occasionally a few flowers rose-coloured or striped with rose, glabrous, with oval or narrow-oval lobes.

STAMENS: 10, sometimes 8, as long or nearly as long as the corolla; filaments glabrous.

PISTIL: slightly exceeding the corolla; ovary densely setose, glandless; style glabrous.

CAPSULE: conic-ovoid, about ⅖ in. long, shorter than the persistent calyx-lobes.

HABITAT: cultivated in Japan and also in China.

A distinct species characterised by the large white flowers, viscid outside, and the rather large soft-pubescent leaves.

f. *narcissiflorum*, Wils. (*R. narcissiflorum*, Planch.), with double white flowers, and f. *plenum*, Wils. (Illustration—Sims in *Bot. Mag.*, t. 2509 (1824)), with double red flowers.

var. *ripense*, Wils. (*R. ripense*, Makino. Illustration—Komatsu in *Icon. Pl. Koisikav*, vol. 2, t. 120 (1914)), with rose-coloured flowers. Spontaneous in southern Japan. Apparently the phylogenetic type of the species and of the preceding forms.

RHODODENDRON MINUTIFLORUM, *Hu* in *Journ. Arnold Arb.*, vol. 12, p. 155 (1931).

Habit : much branched upright shrub to 7 ft. tall ; shoots clothed with appressed flattened red-brown hairs.

Floral Winter-buds : ovoid, with several glabrescent scales.

Leaves : persistent, crowded at the end of the branchlets, subcoriaceous, broadly ovate to oblong, $\frac{1}{3}$-$\frac{1}{2}$ in. long and $\frac{1}{4}$-$\frac{3}{16}$ in. broad, cuneate at base, short-acuminate, revolute and minutely crenulate at the margin, dull dark green and strigose-setose above, pale green and glabrous beneath except strigose-setose on the midrib and on the margins ; petiole strigose-setose, about $\frac{1}{8}$ in. long.

Inflorescence : 3-flowered, appearing with the leaves ; bracts minute, triangular, acute ; pedicles strigose-setose, $\frac{1}{4}$-$\frac{3}{8}$ in. long.

Calyx : with distinct roundish lobes, about $\frac{1}{16}$ in. long, completely covered by and fimbriate on the margins with bristly fuscous hairs.

Corolla : rotate-funnel-form, white, not spotted, about $\frac{5}{16}$ in. across, tube outside pilosulous with reddish hairs, glabrous inside, about $\frac{1}{8}$ in., with spreading ovate-oblong, short-acuminate lobes about as long as the tube, glabrous.

Stamens : 5, subequal, exserted, about $\frac{1}{4}$ in. long, minutely puberulous except the upper $\frac{1}{3}$; anthers oblong.

Pistil : exceeding the stamens ; ovary densely clothed with fuscous bristly hairs, about $\frac{1}{8}$ in. long ; style declinate, pubescent with reddish hairs ; stigma capitate.

Capsule : unknown.

Habitat : Southern China, Kwangsi province.

Related to *R. Seniavinii*, Maxim., but the flowers are much smaller, the corolla is spotted, and the leaves are very much smaller, strigose-setose above and glabrous beneath except the setose midrib. A. R.

RHODODENDRON NAKAHARAI. *Hayata* in *Jour. Coll. Sci. Tokyo*, vol. 25, art. 19, 153 (*Fl. Mont. Formos.*) (1908).

(Syn.: R. SERPYLLIFOLIUM, *Hayata*, not *Miquel.*)

ILLUSTRATION—Kanehira, *Formos. Trees*, 319, fig. 15 (1917), leaf only.

HABIT: low much-branched twiggy shrub; shoots densely clothed with appressed flattened shining brown hairs.

LEAVES: scattered, persistent, oblanceolate, elliptic or elliptic-obovate, $\frac{1}{4}$-$\frac{2}{5}$ in. long and $\frac{1}{8}$-$\frac{1}{5}$ in. wide, obtuse or acutish, mucronulate, narrowed at base, slightly recurved and ciliate at the margin, dark green above and with scattered pilose hairs borne on raised pustules, pale green beneath and clothed with scattered appressed shining brown hairs, veins obsolete; petiole $\frac{1}{24}$-$\frac{1}{12}$ in. long, densely strigose.

INFLORESCENCE: 2-3-flowered; pedicels $\frac{1}{8}$-$\frac{1}{6}$ in. long, densely clothed with flattened shining brown hairs.

CALYX: with membranous oval lobes $\frac{1}{12}$ in. long, densely strigose and ciliate with long brown hairs.

COROLLA: funnelform-campanulate, $\frac{1}{5}$ in. long, dark red, with obovate rounded lobes, tube villous at the base within.

STAMENS: 10, about half as long as corolla; filaments villous below the middle; anthers dark.

PISTIL: slightly exceeding the stamens; ovary conic-ovoid, densely setose; style glabrous.

HABITAT: Formosa, province Taihoku.

Related to *R. obtusum*, which is easily distinguished by its larger dimorphic leaves and larger flowers with 5 stamens. Similar to *R. serpyllifolium*, which has nearly glabrous deciduous leaves and 5 stamens longer than the corolla.

Rhododendron obtusum, *Planchon*, var. Kaempferi, *Wils.*

A. Flowering shoot. B. Ovary. C. Fruit. D. Anther. E. Pistil and Calyx. F. Stamen.

RHODODENDRON OBTUSUM, *Planchon* in *Fl. des Serr.*, vol. 9, 80 (1854).

(Syn.: R. THUNBERGII, *Planch.*; R. INDICUM, var. OBTUSUM, *Maxim.*; AZALEA OBTUSA, *Lindl.*)

ILLUSTRATION—Lindley in *Bot. Reg.*, vol. 32, t. 37 (1846).

HABIT: low shrub, rarely more than 3 ft. tall, sometimes nearly prostrate, twiggy; branchlets densely clothed with appressed flattened brown hairs.

FLORAL WINTER-BUDS: ovoid, with about 6 ovate, acuminate scales ciliate and with pale grey strigose hairs along the middle.

LEAVES: partly persistent, dimorphic; spring leaves oval to elliptic-ovate, $\frac{1}{2}$-$1\frac{1}{4}$ in. long, acute or acutish, broad-cuneate at base, bright green above, pale beneath, on both sides with scattered appressed straight pale hairs, particularly on the midrib; summer leaves oblong-oblanceolate to obovate, more coriaceous, acute to rounded and mucronate at apex, dark green above; petiole about $\frac{1}{12}$ in. long, appressed-pubescent.

INFLORESCENCE: 1-3-flowered; pedicels $\frac{1}{6}$-$\frac{1}{3}$ in. long, densely clothed with appressed flattened lustrous brown hairs.

CALYX: with green ovate ciliate lobes, $\frac{1}{24}$-$\frac{1}{6}$ in. long.

COROLLA: funnelform, about 1 in. across, varying in size and in colour from salmon or salmon-red, pink, rosy-mauve, magenta to scarlet and crimson, also white (f. *album*, Schneid.).

STAMENS: 5, about as long as corolla; filaments glabrous; anthers pale yellow-brown to purple.

PISTIL: exceeding the corolla; ovary densely clothed with appressed brown hairs; style glabrous, nearly straight.

CAPSULE: conic-ovoid, $\frac{1}{4}$ in. long, densely appressed-setose.

HABITAT (including the varieties): northern to southern Japan.

The typical form of this species is known only in cultivation. A low-growing form is f. *amoenum*, Wils. (*Azalea amoena*, Lindl.; *R. amoenum*, Planch.), with elliptic or elliptic-obovate acute to acutish thinner leaves $\frac{1}{2}$-1 in. long and a rather small rich magenta-coloured corolla usually double (hose-in-hose). The wild form of southern and central Japan, f. *japonicum*, Wils. (*R. kiusianum*, Makino), is intermediate between f. *amoenum* and the type; it is the origin of the Kurume Azaleas. More different is var. *Kaempferi*, Wils. (*R. Kaempferi*, Planch.; *R. Sieboldii*, Miq., (?) *R. lusiduscum*, Nakai; *Azalea Kaempferi*, André. Illustration—Shirasawa, *Icon. Ess. For. Jap*, vol. 2, t. 61 (1908)). It grows in central and northern Japan and is a loosely branched shrub to 8 ft. high. Leaves deciduous, except a few small summer leaves, elliptic to ovate-lanceolate, 1-$2\frac{1}{2}$ in. long, acute, strigose-pubescent on both sides. Corolla $1\frac{1}{2}$-2 in. across, usually salmon-red to pink; anthers yellow; calyx up to $\frac{1}{3}$ in. long; capsule to $\frac{1}{3}$ in. long. Var. *Kaempferi*, f. *mikawanum*, Wils. (*R. transiens*, Nakai; *R. tectum*, Koidz.), has purple flowers and 5-10 stamens.

RHODODENDRON OLDHAMII, *Maximowicz* in *Mém. Acad. Sci. St. Pétersb.*, ser. 7, vol. 16, no. 9, 34 (*Rhodod. As. Or.*) (1870).

(Syn.: AZALEA OLDHAMII, *Hort. Veitch.*)

ILLUSTRATION—Komatsu in *Icon. Pl. Koisikav.*, vol. 2, t. 119 (1914).

HABIT: much-branched shrub to 10 ft. tall, with twiggy branches; young shoots densely clothed with spreading red-brown glandular hairs mixed with scattered flattened somewhat spreading hairs.

FLORAL WINTER-BUDS: ovoid, outer scales densely clothed along the middle with appressed yellowish hairs, the inner viscid.

LEAVES: persistent, dimorphic, elliptic or elliptic-oblong to elliptic-ovate, rarely lanceolate, $\frac{3}{4}$-$3\frac{1}{4}$ in. long and $\frac{2}{5}$-$2\frac{1}{2}$ in. wide, rounded or subacute and distinctly mucronate, cuneate at base, on both sides clothed with spreading glandular red-brown hairs, at maturity glabrescent above and scabrate, veins impressed above, raised and reticulate below; summer leaves oval or broad-elliptic on flattened long-pilose petioles, often $\frac{1}{4}$ or $\frac{1}{2}$ as long as blade; petiole $\frac{1}{6}$-$\frac{1}{2}$ in. long, clothed with spreading hairs similar to those on the leaves.

INFLORESCENCE: 1-3-flowered; pedicels covered with long spreading glandular red-brown hairs.

CALYX: green, variable, the lobes from $\frac{1}{12}$-$\frac{1}{4}$ in. long and rounded to $\frac{1}{3}$ in. long and lanceolate, with long red-brown glandular hairs.

COROLLA: funnelform, red, $1\frac{1}{4}$-2 in. across, with spreading rounded lobes, glabrous.

STAMENS: 10, unequal, shorter than corolla or the longest nearly as long; filaments papillose below the middle.

PISTIL: exceeding the stamens, about as long as corolla; ovary densely glandular-setose; style papillose below the middle.

CAPSULE: erect, ovoid, $\frac{1}{3}$-$\frac{2}{5}$ in. long, glandular-setose, on pedicels $\frac{2}{5}$-$\frac{3}{5}$ in. long.

HABITAT: Formosa, from sea-level to about 8000 ft. altitude.

A distinct and handsome species characterised by its long glandular red-brown hairs of the branchlets, pedicels and calyx, the rather large densely hairy leaves and the large red flowers.

RHODODENDRON PULCHRUM, *Sweet*, *Brit. Flow. Gard.*, ser. 2, vol. 2, t. 117 (1832).

(Syn.: R. INDICUM, var SMITHII, *Sweet*; R. PHOENICEUM, f. SMITHII, *Wils.*)

ILLUSTRATION—see above.

HABIT: loosely-branched shrub to 6 ft. tall; shoots clothed with appressed flattened grey-brown hairs.

FLORAL WINTER-BUDS; ovoid, acute, the outer scales clothed with appressed straight brown hairs, the inner viscid.

LEAVES: persistent, chartaceous, dimorphic, elliptic to elliptic-lanceolate or oblong-oblanceolate, 1-2¼ in. long and ⅓-¾ in. wide, acute and mucronate, cuneate at base, entire, clothed at first with scattered appressed fulvous hairs, becoming later glabrous or glabrescent above; petioles ⅙-¼ in. long, densely strigose.

INFLORESCENCE: 1-3-flowered; pedicels ¼-½ in. long, densely clothed with fulvous somewhat spreading hairs.

CALYX: with lanceolate lobes about ⅓ in. long, ciliate and often slightly serrulate, clothed with appressed long straight hairs.

COROLLA: broad-funnelform, about 2½ in. wide, with broad-ovate lobes, rosy-purple, spotted dark purple.

STAMENS: 10, unequal or subequal, shorter than the corolla or the longer nearly as long; filaments pubescent below.

PISTIL: about as long as corolla; ovary densely strigose; style glabrous, with lobed stigma.

CAPSULE: oblong-ovoid, about ⅓ in. long, strigose, subtended by the persistent calyx.

HABITAT: not known wild; introduced from China and some of the varieties from Japan.

A variable species closely related to *R. scabrum* and possibly a hybrid between *R. scabrum* and *R. mucronatum*. It differs from *R. scabrum* chiefly in the lanceolate or ovate-oblong, non-glandular calyx-lobes, the rose-purple to magenta colour of the flowers, the thinner leaves and the looser and less stiff pubescence of the branchlets and pedicels.

Many varieties are in cultivation; the most important are:—*R. pulchrum*, var. *phoeniceum*, Rehd. (*R. phoeniceum*, G. Don; *R. puniceum*, Planch., not Roxb.; *Azalea Raesonii*, Paxt. Illustration—*Bot. Mag.*, t. 2667). Flowers magenta. *R. pulchrum*, var. *calycinum*, Rehd. (*R. calycinum*, Planch.; *R. Oomurasaki*, Makino; *R. osakazuki*, Komatsu; *R. ledifolium*, var. *purpureum*, Maxim. Illustration—Paxton, *Flow. Gard.*, vol. 2, t. 70). Flowers larger, more brightly coloured, rose-purple with carmine spots; calyx-lobes larger. *R. pulchrum*, var. *Maxwellii*, Rehd. (*R. Maxwellii*, Millais, *Rhodod.*, 208, fig.). Flowers carmine-red. *R. pulchrum*, var. *tebotan*, Rehd. (*R. tebotan*, Komatsu. Illustration—Nakai, *Trees & Shrubs Jap.*, ed. 2, vol. 1, 152). Flowers double, rosy-red, with small green leaves in the centre.

RHODODENDRON RIVULARE, *Handel-Mazzetti* in *Akad. Anz. Akad. Wiss. Wien*, 1921, no. 18 (*Pl. Nov. Sin. Fortsetz.* 12, p. 8) (1921).

HABIT: shrub more than 3 ft. tall, with slender branchlets; shoots with spreading ferrugineous later fuscous hairs partly long and glandless and partly short and gland-tipped.

FLORAL WINTER-BUDS: narrow, scales white-tomentulose, with rufous tufts of hairs at apex, the inner viscid.

LEAVES: persistent, chartaceous, sparse, ovate-lanceolate, 2-3½ in. long and ¾-1½ in. wide, acuminate and long-mucronate, rounded at base, ciliate, dark green above and at first sparsely pubescent, yellowish beneath and loosely hirsute, viscid when young, veins and veinlets impressed above, raised beneath, with fuscous reticulation; petiole ⅙-½ in. long, with long glandless and short gland-tipped ferrugineous hairs.

INFLORESCENCE: many-flowered; pedicels about ½ in. long, pubescent like the petioles.

CALYX: with narrow-triangular long-ciliate lobes up to ⅛ in. long.

COROLLA: funnelform, glabrous outside, puberulous inside.

STAMENS: 5; filaments sparsely puberulous at base.

PISTIL: with rufous-setose ovary.

CAPSULE: nearly ½ in. long.

HABITAT: western China, province Kweichou.

This incompletely known species is related to *R. Oldhamii*, which differs in the few-flowered inflorescence, shorter pedicels, 10 stamens and glandular ovary. It is not in cultivation.

RHODODENDRON RUBROPILOSUM, *Hayata* in *Jour. Coll. Sci. Tokyo*, vol. 30, art. 1, p. 173 (*Mat. Fl. Formos.*) (1911).

(Syn.: R. CARYOPHYLLUM, *Hayata*; R. RANDAIENSE, *Hayata*.)

ILLUSTRATION—Kanehira, *Formos. Trees*, 326, fig. 11 (1917), leaf only.

HABIT: upright twiggy shrub to 10 ft., with rigid ascending branches; shoots densely covered with appressed flattened grey to red-brown hairs.

FLORAL WINTER-BUDS: outer scales strigose along the middle and ciliate, the inner strigose toward the apex.

LEAVES: persistent, scattered on the shoots and crowded at the ends of the branchlets, oblong-lanceolate to elliptic-lanceolate, $\frac{1}{2}$-1$\frac{3}{4}$ in long and $\frac{1}{5}$-$\frac{3}{4}$ in. wide, acute and glandular-mucronate, cuneate at base, dark green above and with scattered appressed pale grey hairs, pale green beneath and clothed with flattened appressed grey to brown hairs particularly on the midrib; petiole $\frac{1}{8}$-$\frac{1}{5}$ in. long, densely clothed with appressed flattened hairs.

INFLORESCENCE: 2-4-flowered; pedicels $\frac{1}{8}$-$\frac{1}{6}$ in. long, densely strigose, hidden by the bud-scales.

CALYX: with minute lobes densely clothed with strigose brown hairs.

COROLLA: funnelform with spreading lobes, $\frac{3}{5}$-1 in. across, pink, spotted with rose.

STAMENS: 7-10, unequal, the longer about as long as corolla; filaments pilose toward the base.

PISTIL: longer than stamens; ovary densely clothed with pale grey soft hairs; style slightly curved, with a few flattened brown hairs at base.

CAPSULE: conic-ovoid, $\frac{1}{5}$-$\frac{1}{3}$ in. long, densely clothed with shaggy brown hairs.

HABITAT: Formosa, on mountain slopes east of Arisan.

Related to *R. subsessile*, Rendle, but it differs in its pink flowers with the stamens shorter than the corolla, and is perhaps not specifically distinct from that species.

RHODODENDRON RUFO-HIRTUM, *Handel-Mazzetti* in *Akad. Anz. Akad. Wiss. Wien*, 1921, no. 18 (*Pl. Nov. Sin. Forts.* 12, p. 9).

HABIT: much-branched shrub with slender branches; shoots densely hirsute with short whitish and longer rufous hairs.

FLORAL WINTER-BUDS: with broad-ovate loosely strigose scales, the inner densely white-pubescent outside and like the ciliolate bractlets viscid.

LEAVES: persistent, chartaceous, crowded at the ends of the branchlets, ovate-lanceolate, 1-2½, rarely 3½ in. long and ⅝-1 in. broad, acuminate, cuneate to nearly rounded at base, dark green above, paler beneath, midrib and secondary veins impressed above, raised beneath and densely hairy, veinlets impressed above, fuscescent beneath.

INFLORESCENCE: few-flowered; pedicels almost wanting or to ⅙ in. long, clothed with yellow strigose hairs.

CALYX: with ovate acute teeth about $\frac{1}{10}$ in. long, clothed with golden yellow strigose hairs.

COROLLA: funnelform-campanulate, about ⅕ in. long, deep rose, divided below the middle into narrow-oblong obtuse lobes about ⅓ in. wide, the tube about ⅙ in. long, glabrous outside, inside papillose-pilose about the middle.

STAMENS: as long as corolla; filaments papillose-pilose below the middle.

PISTIL: slightly longer than corolla; ovary densely yellow-strigose; style glabrous.

HABITAT: western China, province Yunnan.

Related to *R. Oldhamii*, which differs in the glandular pubescence of the branchlets and the larger flowers, and also to *R. rivulare*, which is easily distinguished by the 5 stamens and the glandular branchlets.

RHODODENDRON SASAKII, *Wilson* in *Jour. Arnold Arb.*, vol. 6, 181 (1925).

(Syn.: R. BREVIPERULATUM, *Wils.* (1921), not *Hayata.*)

HABIT: loosely-branched shrub, about 6 ft. tall; branchlets slender, clothed with appressed flattened dark red-brown hairs.

FLORAL WINTER-BUDS: scales several, ciliate, ovate, the outer glabrous except sparsely pubescent near apex, the inner densely clothed toward the apex with shining chestnut-brown hairs.

LEAVES: crowded, persistent, chartaceous, oblanceolate to oblong-lanceolate, $\frac{1}{2}$-$1\frac{1}{4}$ in. long and $\frac{1}{5}$-$\frac{2}{5}$ in. wide, acutish to obtuse or rounded, mucronate, cuneate at base, rarely rounded, dark green above, on both sides clothed with appressed pilose hairs changing from grey-brown to grey, midrib impressed above; petiole $\frac{1}{6}$-$\frac{2}{5}$ in. long, appressed-pubescent.

INFLORESCENCE: 2- to several-flowered; pedicels $\frac{1}{8}$-$\frac{1}{5}$ in. long, densely clothed with appressed red-brown hairs.

CALYX: with membranous oblong to oblong-ovate ciliate lobes about $\frac{1}{5}$ in. long, densely clothed with appressed red-brown hairs.

COROLLA: red, wide-funnelform, $1\frac{1}{4}$-$1\frac{1}{2}$ in. long and as wide, deeply 5-lobed, with oblong obtuse lobes.

STAMENS: 5, about as long as corolla; filaments villous below the middle.

PISTIL: slightly longer than corolla; ovary conic, densely strigose; style filiform, pilose below the middle, slightly dilated below the stigma.

HABITAT: Formosa, province Nanto.

Most closely related to *R. Simsii* but easily distinguished by the 5 stamens. Not yet introduced.

RHODODENDRON SCABRUM, *G. Don, Gen. Syst.*, vol. 3, 846 (1834).

(Syn.: R. SUBLANCEOLATUM, *Miquel*; R. SUBLATERITIUM, *Komatsu*; R. LIUKIUENSE, *Komatsu*; AZALEA SUBLANCEOLATA, *Kuntze*.)

ILLUSTRATION—Craib in *Bot. Mag.*, t. 8478 (1913).

HABIT: loosely branched shrub 3-6 ft. tall, with rather stout branches; shoots clothed with appressed flattened grey-brown hairs which gradually disappear.

FLORAL WINTER-BUDS: ovoid, acute, outer scales clothed with strigose rufous hairs, the inner cinnamon-brown, viscid, persisting at the base of the pedicels.

LEAVES: persistent, coriaceous, dimorphic; spring leaves elliptic-lanceolate to lanceolate, $1\frac{1}{4}$-4 in. long and $\frac{3}{4}$-$1\frac{1}{2}$ in. wide, acute to obtuse and mucronate, broad-cuneate at base, ciliate and subcrenulate at the slightly revolute margin, at first with scattered appressed straight grey-brown hairs, at maturity glabrescent except on the primary and secondary veins, principal veins impressed above and raised beneath; summer leaves similar, but oblanceolate, smaller and more coriaceous; petiole $\frac{1}{6}$-$\frac{1}{3}$ in. long, stout, flattened, clothed with appressed grey-brown hairs.

INFLORESCENCE: 2-6-flowered; pedicels $\frac{1}{3}$-$\frac{1}{2}$ in. long, densely fulvous-strigose.

CALYX: large, green, with oval rounded lobes, about $\frac{1}{4}$ in. long or occasionally all or some lanceolate and up to $\frac{1}{2}$ in. long and acuminate, glandular and ciliate and covered with appressed straight grey hairs.

COROLLA: broad-funnelform, about $2\frac{1}{2}$ in. across and as long, rose-red to bright scarlet, with dark dots on the 3 upper lobes, lobed nearly to the middle.

STAMENS: 10, shorter than corolla, short-pilose below the middle.

PISTIL: longer than stamens; ovary glandular and strigose; style glabrous.

CAPSULE: upright, ovoid, about $\frac{1}{2}$ in. long, sparsely hairy, subtended by the persistent calyx-lobes.

HABITAT: Liukiu Islands.

A distinct and conspicuous species characterized by the large scarlet to rose-red flowers and the large persistent leaves.

RHODODENDRON SENIAVINII, *Maximowicz* in *Mém. Acad. Sci. St. Pétersb.*, ser. 7, vol. 16, no. 9, p. 33, t. 3, figs. 21-24 (*Rhodod. As. Or.*) (1870).

ILLUSTRATION—see above.

HABIT: much-branched twiggy shrub to 6 ft. tall; shoots densely clothed with appressed flattened grey or rufous-grey hairs.

FLORAL WINTER-BUDS: ovoid, with several scales, the outer strigose along the middle and ciliolate, otherwise glabrous.

LEAVES: persistent or subpersistent, dimorphic, crowded at the end of the branchlets; spring leaves ovate to ovate- or oblong-lanceolate, $\frac{2}{5}$-$2\frac{1}{2}$ in. long and $\frac{1}{3}$-1 in. broad, acuminate or acute and mucronate, broad-cuneate at base, dark green above and at maturity glabrous or glabrescent, light green beneath and rather densely clothed with long strigose rufous or grey-brown hairs; summer leaves much smaller, ovate and acute to broad-oval and obtuse; petiole $\frac{1}{6}$-$\frac{1}{3}$ in. long, densely strigose.

INFLORESCENCE: 3-10-flowered; pedicels $\frac{1}{8}$-$\frac{1}{5}$ in. long, densely strigose.

CALYX: small, densely clothed with straight grey or rufous-grey hairs.

COROLLA: funnelform, about $\frac{2}{5}$ in. across, white, the nearly cylindric tube about $\frac{1}{3}$ in. long, suffused with rose-colour and appressed-setose outside, much longer than the spreading lobes, the upper lobes spotted purple.

STAMENS: 5, longer than the corolla; filaments glabrous.

PISTIL: exceeding the stamens; ovary densely clothed with strigose hairs; style villous at base, with capitate lobed stigma.

CAPSULE: narrow-ovoid, nearly $\frac{1}{3}$ in. long, densely strigose.

HABITAT: eastern China, province Fukien and Hunan.

Related to *R. microphytum*, which differs chiefly in its red-brown pubescence, smaller leaves, glabrous corolla-tube and glabrous style. Not yet introduced.

RHODODENDRON SERPYLLIFOLIUM, *Miquel* in *Ann. Mus. Bot. Lugd.-Bat.*, vol. 2, 165 (1865-6).

(Syn.: AZALEA SERPYLLIFOLIA, *A. Gray.*)

ILLUSTRATION—Hooker, f. in *Bot. Mag.*, t. 7503 (1896).

HABIT: low upright much-branched shrub; shoots slender, clothed with appressed flattened chestnut-brown hairs.

FLORAL WINTER-BUDS: ovoid, about $\frac{1}{6}$ in. long or less, with several broad scales glabrous except a tuft of bristly brown hairs at apex.

LEAVES: deciduous, mostly crowded at end of short branchlets, obovate to oblong-obovate or elliptic, $\frac{1}{4}$-$\frac{1}{2}$ in. long, obtuse or acutish, cuneate at base, bright green above and with scattered strigose brown hairs, light green beneath and usually only with a few flattened brown hairs on the midrib; petiole scarcely $\frac{1}{24}$ in. long, strigose.

INFLORESCENCE: 1-, rarely 2-flowered; pedicels very short, strigose, hidden between the bud-scales.

CALYX: small, with 5 spreading broad rounded lobes strigose outside.

COROLLA: short-funnelform, about 1 in. across, rosy-pink, glabrous, with spreading oval rounded lobes.

STAMENS: 5, exceeding the corolla-lobes, about $\frac{2}{3}$ in. long; filaments glandular below the middle; anthers purple-brown.

PISTIL: about as long as stamens; ovary densely clothed with pale flattened hairs; style glabrous.

HABITAT: central and southern Japan.

A distinct species on account of its very small leaves and rather small flowers. A form with white flowers is f. *albiflorum*, Makino.

RHODODENDRON SIMSII, *Planchon* in *Fl. des Serr.*, vol. 9, 78 (1854).

(Syn.: R. INDICUM, var. IGNESCENS, *Sweet*; R. CALLERYI, *Planchon*; R. INDICUM, *Hemsley*, in part, not *Sweet*; AZALEA INDICA, *Aiton*, in part, not *Linnaeus*.)

ILLUSTRATION—Sims in *Bot. Mag.*, t. 1480 (1812).

HABIT: much-branched twiggy shrub, usually up to 5, rarely to 8 ft. tall; shoots densely clothed with appressed flattened shining brown hairs.

FLORAL WINTER-BUDS: ovoid, with several scales densely strigose along the middle and ciliate, otherwise glabrous.

LEAVES: persistent or partly persistent, chartaceous, dimorphic; spring leaves elliptic or ovate to oblong-elliptic, $\frac{3}{4}$-2 in. long and $\frac{1}{3}$-$\frac{3}{4}$ in. wide, acute or sometimes acuminate, cuneate or broad-cuneate at base, sparingly strigose and dull green above, paler and more densely strigose beneath, at least on midrib and veins; summer leaves obovate to oblanceolate, $\frac{1}{3}$-1$\frac{1}{2}$ in. long and $\frac{1}{6}$-$\frac{1}{2}$ in. wide, more coriaceous; petiole $\frac{1}{12}$-$\frac{1}{4}$ in. long, densely strigose.

INFLORESCENCE: 2-6-flowered; pedicels $\frac{1}{5}$-$\frac{2}{5}$ in. long, densely strigose.

CALYX: with ovate to lanceolate lobes $\frac{1}{12}$-$\frac{1}{4}$ in. long, strigose and ciliate.

COROLLA: broad-funnelform, 1$\frac{1}{2}$-2 in. across, rose-red to bright or dark red, spotted, with broad-ovate lobes.

STAMENS: usually 10, rarely 8 or 9, about as long as the corolla; filaments pubescent below the middle; anthers purple.

PISTIL: exceeding the corolla; ovary strigose; style glabrous.

CAPSULE: ovoid, about $\frac{1}{3}$ in. long, setose, with the persistent calyx at base.

HABITAT: throughout China, except in the northern provinces, also in Formosa and a variety on the Kawanabe Islands.

This species has been confused with *R. indicum*, which differs chiefly in its smaller and narrower crenulate leaves and flowers with 5 stamens. The numerous garden forms known as "Indian Azaleas" belong almost exclusively to this species. Some more important varieties are the following:—

var. *vittatum*, Wils. (*Azalea vittata*, Fort.; *R. vittatum*, Planch. Illustration—*Fl. des Serr.*, vol. 9, t. 886, 888), with the flowers striped white and lilac-purple; var. *eriocarpum*, Wils. (*R. eriocarpum*, Nakai. Illustration—Nakai, *Trees & Shrubs Jap.*, ed. 2, p. 130), with white to pink or rose-coloured flowers and broader obtuse summer leaves; Kawanabe Islands; var. *Simsii*, var. *mesembrinum*, Rehd. (*R. mesembrinum*, Balf. f. & Forrest), with smaller white, purple-dotted flowers, the tube slightly papillose inside, borne in 2-6-flowered clusters, and with less densely strigose leaves slightly glaucescent beneath; Yunnan.

RHODODENDRON SUBSESSILE, *Rendle* in *Jour. Bot.*, vol. 34, 357 (1896).

HABIT: much-branched shrub; shoots densely clothed with appressed flattened chestnut-brown hairs.

FLORAL WINTER-BUDS: ovoid, outer scales with appressed brown hairs along the middle and ciliate, otherwise glabrous, the inner appressed-strigose toward the apex.

LEAVES: persistent, elliptic to lanceolate, $\frac{3}{5}$-$1\frac{1}{2}$ in. long and $\frac{1}{3}$-$\frac{1}{2}$ in. broad, acute and prominently mucronate, cuneate or broad-cuneate at base, with slightly recurved margins, midrib impressed above, prominent below, at first clothed on both sides with rufous-grey silky hairs, at maturity with white appressed hairs above.

INFLORESCENCE: 2-4-flowered; pedicels clothed with appressed ferrugineous hairs, $\frac{1}{12}$-$\frac{1}{6}$ in. long, and hidden by the bud-scales.

CALYX: with small oval or suborbicular lobes, densely clothed with flattened brown hairs.

COROLLA: campanulate-funnelform, $\frac{3}{4}$ in. long and about 1 in. wide, with a tube about $\frac{1}{3}$ in. long and short spreading lobes, lilac to violet-purple.

STAMENS: 6-10, slightly longer than the corolla; filaments papillose-pilose toward the base.

PISTIL: longer than the stamens; ovary densely clothed with flattened ferrugineous hairs; style with a few flattened brown hairs at base.

CAPSULE: conic-ovoid, densely clothed with appressed rufous hairs.

HABITAT: Philippine Islands, highlands of northern Luzon.

Apparently most nearly related to *R. rubropilosum*, Hay., which differs chiefly in the pink flowers. It resembles *R. mucronatum*, G. Don, but the bud-scales are not viscid, the leaves are smaller and more densely strigose, the flowers much smaller and the calyx minute. Not yet introduced.

RHODODENDRON TOSAENSE, *Makino* in *Tokyo Bot. Mag.*, vol. 6, 53 (1892).

(Syn.: R. Komiyamae, *Makino*.)

Illustration—Komatsu in *Icon. Pl. Koisikav.*, vol. 2, t. 130 (1915).

Habit: much-branched shrub, up to 5, or sometimes 7 ft. tall; shoots slender, clothed with flattened grey to greyish-brown hairs.

Floral Winter-buds: ovoid, with several broad-ovate scales glabrous except strigose hairs along the middle and ciliolate.

Leaves: deciduous or partly persistent, crowded at end of the branchlets, lanceolate or oblanceolate to elliptic-lanceolate, $\frac{1}{2}$-$1\frac{1}{2}$ in. long and $\frac{1}{5}$-$\frac{2}{5}$ in. wide, acute, cuneate at base, clothed with scattered appressed grey hairs on both sides, changing in autumn to purplish-crimson; petiole about $\frac{1}{12}$ in. long, strigose.

Inflorescence: 1-6-flowered; pedicels about $\frac{1}{6}$ in. long, densely strigose.

Calyx: very small, strigose and ciliate with long pale hairs.

Corolla: funnelform, about $1\frac{1}{4}$ in. across, lilac-purple.

Stamens: 5-10, slightly shorter than the corolla; filaments pubescent below the middle.

Pistil: slightly longer than corolla; ovary clothed with appressed strigose hairs; style glabrous.

Capsule: ovoid, about $\frac{1}{3}$ in. long, clothed with appressed straight hairs.

Habitat: southern Japan.

Somewhat similar to *R. Kanehirai*, but that species has larger leaves slightly crenulate and larger flowers with 10 stamens.

RHODODENDRON TSCHONOSKII, *Maximowicz* in *Mém. Acad. Sci. St. Pétersb.*, ser. 7, vol. 16, no. 9, p. 42, t. 3, figs. 8-14 (*Rhodod. As. Or.*) (1870).

(Syn.: R. TRINERVE, *Franch.*; AZALEA TSCHONOSKII, *Kuntze.*)

ILLUSTRATION—Nakai, *Fl. Sylv. Kor.*, vol. 8, 46, t. 17 (1919).

HABIT: much-branched twiggy shrub 1-5, or occasionally to 8 ft. tall, sometimes forming a low broad mat; shoots densely covered with appressed flattened rufous hairs.

FLORAL WINTER-BUDS: broad-ovoid, with several scales, the outer strigose outside, the inner with fulvous brown hairs toward the apex, glabrous below.

LEAVES: deciduous, crowded at end of the branchlets, narrow-lanceolate to elliptic-lanceolate or broad-oblanceolate, $\frac{1}{5}$-$\frac{1}{5}$ in. long and $\frac{1}{6}$-$\frac{2}{5}$ in. wide, acute and mucronulate, cuneate at base, clothed on both sides with appressed red-brown hairs, pale beneath, sometimes with three prominent veins, changing in autumn to orange-red and crimson; petiole very short.

INFLORESCENCE: 3-6-flowered; pedicel $\frac{1}{8}$ in. long, clothed with appressed whitish hairs.

CALYX: very small, clothed with fulvous long hairs.

COROLLA: funnelform, about $\frac{1}{3}$ in. across, white, with cylindric tube about $\frac{1}{8}$ in. long, and 4 or 5 spreading lobes.

STAMENS: 4 or 5, exserted, short-pubescent below the middle.

PISTIL: about as long as stamens; ovary densely clothed with brown hairs; style glabrous.

CAPSULE: ovoid, about $\frac{1}{5}$ in. long, densely strigose.

HABITAT: Japan and southern Korea.

A very distinct species on account of its small leaves and very small white, sometimes 4-merous flowers with cylindric tube. The form with 4-merous flowers has been distinguished as f. *tetramerum*, Makino, and that with 3-nerved leaves as var. *trinerve*, Makino.

RHODODENDRON YEDOENSE, *Maximowicz apud Regel* in *Gartenfl.*, vol. 35, 565, t. 1233 (1886).

(Syn.: R. YODOGAWA, *Kunert*; R. MATSUMURAI, *Komatsu*; AZALEA YODOGAWA, *Grignan.*)

ILLUSTRATION—see above.

This is a double-flowered form of *R. yedoense*, var. *poukhanense*, from which it chiefly differs in the pale rose-purple quite double flowers and the rather large calyx with ovate to oblong-ovate lobes about $\frac{1}{2}$ in. long. Cultivated in Japan and Korea.

RHODODENDRON YEDOENSE, var. **POUKHANENSE**, in *Tokyo Bot. Mag.*, vol. 34 (274) (1920).

(Syn.: R. POUKHANENSE, *Lévcillé*; R. HALLAISANENSE, *Léveillé*; R. COREANUM, *Rehd.*)

ILLUSTRATION—Nakai, *Fl. Sylv. Kor.*, vol. 8, t. 18 (1919).

HABIT: compact, densely branched shrub to 3 ft. tall, on exposed locations forming broad mats, in shaded places more loosely branched and to 6 ft. tall; shoots clothed with appressed grey hairs, glabrescent the second year.

FLORAL WINTER-BUDS: ovoid, pointed, the outer scales covered with appressed grey-brown hairs, the inner viscid.

LEAVES: all or partly deciduous, dimorphic; spring leaves membranous, elliptic-lanceolate to oblong-lanceolate or oblanceolate, $1\frac{1}{4}$-$3\frac{1}{2}$ in. long and $\frac{1}{8}$-$\frac{1}{5}$ in. broad, acute and mucronate, cuneate at base, ciliate, dark green above, paler beneath, clothed on both sides with scattered appressed grey to shining brown hairs, veins impressed above, prominent beneath; summer leaves thicker, oblanceolate, $\frac{1}{6}$-$\frac{1}{2}$ in. wide, often obscurely crenate-serrulate, glabrous or nearly so above at maturity, in autumn changing to orange and crimson; petiole $\frac{1}{8}$-$\frac{1}{3}$ in. long, strigose.

INFLORESCENCE: 2-3-flowered; flowers expanding with or shortly before the leaves; pedicels $\frac{1}{4}$-$\frac{1}{2}$ in. long, densely clothed with loosely appressed strigose hairs.

CALYX: green, with ovate-lanceolate to lanceolate, acute or obtuse lobes $\frac{1}{5}$-$\frac{2}{5}$ in. long, clothed with appressed straight hairs.

COROLLA: broad-funnelform, about 2 in. across, rose to pale lilac-purple, spotted purple-brown, fragrant, with ovate-oblong undulate lobes.

STAMENS: 10, subequal, shorter than corolla; filaments papillose below the middle; anthers purple.

PISTIL: about as long as corolla; ovary densely clothed with appressed hairs; style glabrous or pilose toward the base, purple toward the apex.

CAPSULE: erect, ovoid, $\frac{1}{3}$-$\frac{2}{5}$ in. long, densely strigose and subtended by the persistent calyx.

HABITAT: southern and central Korea.

A handsome and early-flowering species, easily distinguished from the related *R. scabrum* by the deciduous leaves, the glandless calyx-lobes, and the lilac or rosy-purple corolla.

AZALEA SERIES

SUBSERIES SCHLIPPENBACHII

(Syn.: Rhododendron sect. Sciadorhodion, *Rehd. & Wils.*; R. sect. Verticillatae, *Nakai.*)

General Characters:—Low or sometimes rather tall upright shrubs, with usually subverticillate branches and glabrous or villous shoots. Floral winter-buds ovoid to oblong-ovoid with about 10 ciliate pubescent or nearly glabrous scales. Leaves deciduous, rarely subpersistent, usually rhombic to obovate or sometimes ovate, glabrous or glabrescent at maturity, usually villous or silky-pubescent when young, in whorls of 2 to 5 at the end of the branchlets, on vigorous shoots scattered. Flowers 1 to 6 from terminal buds with leafy shoots from the same buds. Corolla rotate-campanulate to rotate-funnelform, pale rose to purple or red, rarely white, usually spotted, glabrous outside. Stamens 6-10, rarely 5, unequal, sometimes declinate. Ovary villous or glandular. Capsule oblong-ovoid to cylindric, rarely conic-ovoid, often furrowed.

Distribution:—Six species in eastern Asia, from central Japan, Korea and north-eastern Manchuria south to Kwangtung and west to western Hupeh.

A distinct group chiefly characterised by the whorled deciduous or rarely subpersistent leaves and the terminal buds producing flowers and leafy shoots, and also by the more or less rotate corolla. In general appearance and in the shape and colour of the corolla it resembles the Canadense subseries, but in that subseries the floral buds produce no leafy shoots and the leaves are not whorled at the end of the branchlets.

AZALEA SERIES

SUBSERIES SCHLIPPENBACHII

KEY TO THE SPECIES

A. Leaves broadest below the middle, ovate to ovate-lanceolate ; stamens nearly equal, 8-10 :
  B. Petiole about $\frac{1}{12}$ in. long, villous ; corolla pale lilac-purple **Farrerae.**
  BB. Petiole $\frac{1}{8}$-$\frac{1}{2}$ in. long, glabrescent ; corolla rose-colour **Mariesii.**
AA. Leaves broadest about or above the middle :
  B. Leaves rhombic, 2-3 at end of branchlets ; corolla red to rose-purple :
    C. Stamens subequal, 6-10 ; corolla rotate-funnelform ; style villous . . . . . **Weyrichii.**
    CC. Stamens unequal, 5-10 ; corolla rotate-campanulate ; style glabrous, glandular or glandular and villous **reticulatum.**
  BB. Leaves broadly elliptic or obovate, 4-5 at end of branchlets ; stamens 10, unequal :
    C. Corolla white ; style glabrous ; leaves 1-2 in. long **quinquefolium.**
    CC. Corolla pink ; style glandular ; leaves 2-4 in. long **Schlippenbachii.**

RHODODENDRON FARRERAE, *Tate apud Sweet, Brit. Flow. Gard.*, ser. 2, vol. 1, t. 95 (1831).

(Syn.: AZALEA SQUAMATA, *Lindl.*; A. FARRERAE, *K. Koch.*)

ILLUSTRATION—Lindley in *Bot. Reg.*, vol. 33, t. 3 (1847).

HABIT: low, densely branched shrub with short rigid shining brown branchlets; shoots clothed with appressed straight and villous hairs, becoming glabrous and grey.

FLORAL WINTER-BUDS: small, broad-ovoid, with about 12 scales, the outer glabrescent, the inner grey or rufous-pubescent.

LEAVES: deciduous or subpersistent, usually three at the end of the branchlets, subcoriaceous, ovate, 1-1¼ in. long and ½-⅘ in. wide, acute or subacute and mucronulate, rounded at base, glabrous or glabrescent, dark green above with impressed veins, pale and reticulate beneath; petiole ½-¼ in. long, densely villous or finally glabrous.

INFLORESCENCE: 1-2-flowered; flowers expanding before the leaves; pedicels about ¼ in. long, scarcely exceeding the bud-scales, densely clothed with appressed and villous rufous or grey hairs.

CALYX: minute, 5-toothed, pubescent.

COROLLA: rotate-funnelform, with short narrow tube and spreading undulate lobes, 1½-2 in. across, pale to deep rose-colour, with red-purple spots, glabrous.

STAMENS: 8-10, unequal, shorter than corolla; filaments glabrous.

PISTIL: as long or slightly longer than stamens; ovary densely clothed with appressed and villous hairs; style slender, curved, glabrous.

CAPSULE: conic-ovoid, about ½ in. long, densely villous and borne on a stout curved villous pedicel ⅓-½ in. long.

HABITAT: eastern China, Hongkong and province Kwangtung.

A distinct species characterised by its small ovate whorled leaves on very short villous petioles and by the comparatively large ovoid fruit.

RHODODENDRON AMAGIANUM, *Makino* in *Journ. Jap. Bot.*, vol. 7 (1930-31), 21.

Illustration—

Habit : a shrub up to 15 ft ; young shoots greyish to greyish-yellow, spreading, densely pubescent with soft hairs, those below inflorescence about 3 mm. diameter.

Leaves : deciduous, in whorls of three at top of branches ; lamina rhomboid to broadly ovate, 4·5-11·5 cm. long, 3-9 cm. broad ; apex acute to acuminate with a mucronate tip ; base widely cuneate, margin minutely toothed, fringed with slender hairs ; upper surface green, sparsely covered with long slender hairs ; midrib slightly impressed, densely pilose at base, primary veins 4-5 on each side ; under surface pale green, sparingly hirsute, with appressed strigose hairs, midrib and veins prominent, densely pilose ; petiole short, 5-10 mm. long, densely tomentose.

Inflorescence : terminal, 3-4 flowers, umbellate.

Pedicels : stout, 6-13 mm. long, densely tomentose with brownish-silky hairs.

Calyx : minute with 5 small dentate lobes, densely hirsute.

Corolla : funnelform, about 4 cm. long and broad, red to brick-red ; lobes spreading, tube about 2 cm. long.

Stamens : 5 or more, as long as corolla.

Pistil : exceeding stamens ; ovary conoid, densely brownish pilose ; style 4·5 cm. long, pilose in lower part, glabrous above.

Capsule : ovoid, 1·4-1·8 cm. long, densely pilose.

Habitat : Japan, Hondo, Idzu, Mount Amagi.

A species closely related to *R. Weyrichii*.

RHODODENDRON MARIESII, *Hemsley & Wilson* in *Kew Bull. Misc. Inform.*, 1907, p. 244.

(Syn.: R. SHOJOENSE, *Hayata*; R. GNAPHALOCARPUM, *Hayata*.)

ILLUSTRATION—Hutchinson in *Bot. Mag.*, t. 8206 (1908).

HABIT: upright branching shrub 3-10 ft. tall, of rather narrow habit with verticillate twiggy branches; shoots covered at first with appressed yellowish silky hairs, soon glabrous and lustrous yellow or chestnut-brown during the first year, becoming later pale grey.

FLORAL WINTER-BUDS: conic-ovoid, with 10-12 greyish-purple ovate ciliate scales, glabrescent or at first appressed-pubescent along the middle, villous inside.

LEAVES: deciduous, chartaceous, 2-3 at the end of the branchlets, ovate-lanceolate, sometimes broad-ovate or elliptic, 1½-3 in. long and ⅘-1½ in. wide, acute and mucronate, cuneate at base, at first covered with appressed yellowish silky hairs, at maturity glabrous, dark green above, paler beneath and prominently reticulate, the principal veins slightly impressed above, raised beneath; petiole ⅙-½ in. long, glabrescent, purplish.

INFLORESCENCE: usually 1-2, occasionally up to 5-flowered; flowers unfolding before the leaves; pedicels ⅙-⅓ in. long, villous.

CALYX: minute, 5-lobed, clothed with appressed grey or yellowish brown hairs.

COROLLA: rotate-funnelform, 1½-2 in. across, with spreading oval lobes longer than the tube, rose-purple, spotted with red-purple on the upper lobes, glabrous.

STAMENS: 10, nearly equal and as long as the corolla; filaments glabrous; anthers purple.

PISTIL: longer than the stamens; ovary densely covered with grey or yellowish brown villous pubescence; style glabrous, curving upward, with a capitate slightly-lobed stigma.

CAPSULE: cylindric, ½-⅗ in. long, slightly furrowed, villous, borne on a straight pedicel.

HABITAT: south-eastern China and central China, from Kiangsu to Fokien to south-eastern Szechuan, and in Formosa.

A distinct species most closely related to *R. Farrerae*, but easily distinguished by the larger leaves, the much longer glabrescent petiole and the cylindric fruit.

RHODODENDRON QUINQUEFOLIUM, *Bisset & Moore* in *Jour. Bot.*, vol. 15, 292 (1877).

(Syn.: AZALEA QUINQUEFOLIA, *Standard Pl. Names*, 26 (1923).)

ILLUSTRATION—Komatsu in *Icon. Pl. Koisikav.*, vol. 1, 59, t. 30 (1912).

HABIT: shrub or small tree 4-25 ft. tall, with partly verticillate, partly alternate branches, the stem with grey-brown corky bark fissured into thick irregular plates; shoots glabrous, shining brown the first year.

FLORAL WINTER-BUDS: oblong-ovoid, acute, with about 9 purple-brown scales glabrous or nearly so except ciliate, the basal ones aristate.

LEAVES: deciduous, 4 or 5 together at the end of the branchlets, broad-elliptic to obovate, $1\frac{1}{4}$-2 in. long and $\frac{3}{4}$-$1\frac{1}{4}$ in. broad, obtuse to rounded and mucronate at apex, cuneate at base, ciliate and often margined with red-purple, glabrous except villous on the midrib above and more or less villous beneath toward the base and sparingly setulose on the midrib; petiole about $\frac{1}{12}$ in. long, villous.

INFLORESCENCE: 1-3-flowered, the flowers expanding with the leaves; pedicels slender, $\frac{1}{2}$-$\frac{3}{4}$ in. long, glandular-pilose.

CALYX: membranous, with 5 lanceolate or deltoid glandular-ciliate lobes $\frac{1}{24}$-$\frac{1}{8}$ in. long.

COROLLA: rotate-campanulate, $1\frac{3}{4}$ in. across, pure white with green spots at the base of the upper lobe, with ovate lobes longer than the tube, glabrous.

STAMENS: 10, unequal, much shorter than corolla; filaments greenish, dilated and villous at base.

PISTIL: exceeding the stamens, but shorter than corolla; ovary glabrous; style glabrous with capitate stigma.

CAPSULE: cylindric, about $\frac{1}{2}$ in. long, terete, oblique at base, on upright pedicels about 1 in. long.

HABITAT: central Japan.

This species has some resemblance to *R. pentaphyllum*, Maxim., with which it is sometimes confused, but that species differs in its pink flowers and in the leafy shoots springing from separate buds below the terminal floral bud.

RHODODENDRON RETICULATUM, *D. Don.*

A. Flowering shoot. B. Fruiting shoot with foliage. C. Anther. D. Ovary. E. Stamen. F. Pistil.

RHODODENDRON RETICULATUM, *D. Don apud G. Don, Gen. Syst.*, vol. 3, 846 (1834).

(Syn.: R. DILATATUM, *Miq.*; R. RHOMBICUM, *Miq.*; R. DECANDRUM, *Makino*; R. WADANUM, *Makino*; R. LAGOPUS, *Nakai*; R. NUDIPES, *Nakai*; AZALEA RETICULATA, *K. Koch*; A. DILATATA, *Kuntze*; A. RHOMBICA, *Kuntze*.)

ILLUSTRATION—Hooker f. in *Bot. Mag.*, t. 6972 (1887).

HABIT: much-branched shrub or bushy tree 3 to 25 ft. tall, with numerous erect or somewhat spreading whorled branches; shoots yellow-brown and sparsely or densely hairy when young, usually soon glabrous, grey the second year.

FLORAL WINTER-BUDS: oblong-ovoid, with about 9 broad mucronulate scales appressed-pubescent along the middle and ciliolate.

LEAVES: deciduous, membranous, in threes or in pairs at the end of the branchlets, broad-ovate or rhombic and occasionally ovate, 1½-2½ in. long, and 1-2¼ in. wide, acute and mucronulate, usually broad-cuneate at base, at first clothed with long or short grey to yellowish-brown hairs, soon glabrous above, beneath usually remaining pubescent on the veins, the principal veins impressed above, raised beneath, and the leaves more or less reticulate beneath, changing in autumn to vinous or blackish purple; petiole ⅛-¼ in. long, flattened, usually villous or glabrous.

INFLORESCENCE: 1-2, rarely 3-4-flowered; flowers expanding before the leaves; pedicels ⅙-⅓ in. long, clothed with appressed grey or brownish hairs.

CALYX: with minute teeth, ciliate and villous or glabrescent.

COROLLA: rotate-funnelform, 1½-2 in. across, rose-purple to magenta, usually unspotted, with short wide tube and spreading oval to oblong lobes, the lower ones more deeply divided, diverging and giving the corolla a two-lipped appearance.

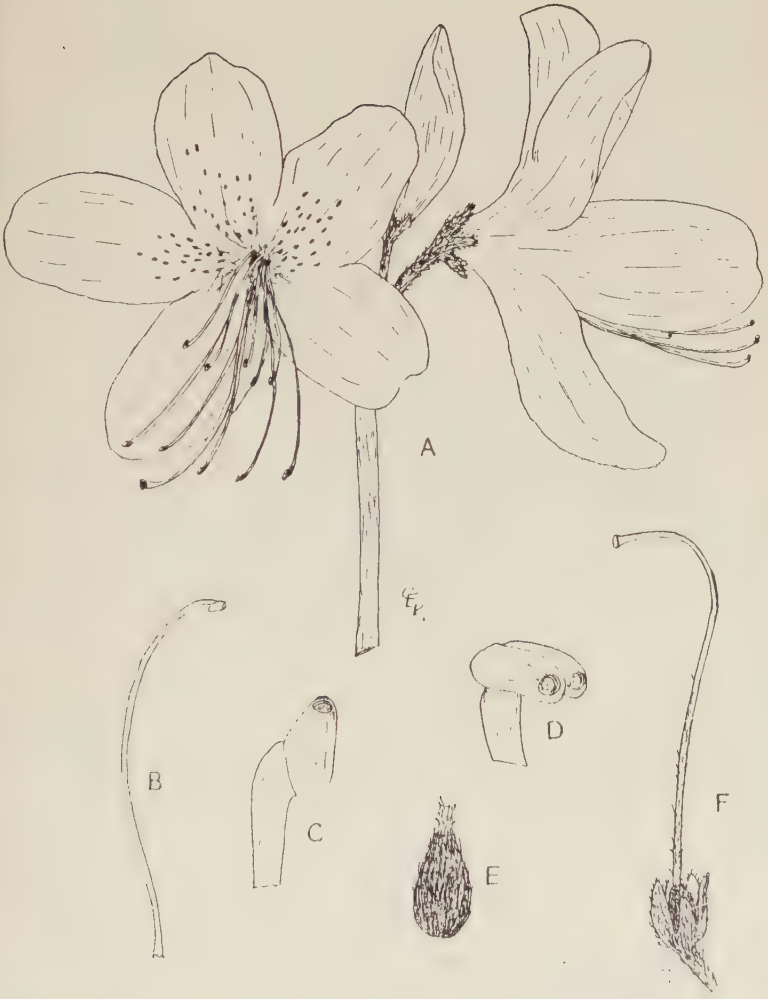
STAMENS: usually 10, unequal, the longer ones as long, the shorter half as long as the corolla; filaments curving upward, glabrous; anthers purple.

PISTIL: exceeding the stamens; ovary villous or glandular, or glandular and villous; style glabrous or pubescent below the middle.

CAPSULE: cylindric, curved, about ½ in. long, furrowed, glandular, glabrous or pubescent.

HABITAT: Japan, widely distributed throughout.

A distinct species, but very variable in the pubescence of the leaves, the ovary and the style, and in the number of the stamens, and some of the species cited above as synonyms have been based on various combinations of these varying characters. The form with 5 stamens has been distinguished as f. *pentamerum*, Wils. (*R. dilatatum*, Maxim., not Miq.; *R. nagasakianum*, Nakai. Illustration—*Bot. Mag.*, t. 7681).



RHODODENDRON SCHLIPPENBACHII, *Maximowicz* (Plate I.).

A. Flowering shoot. B. Stamen. C and D. Anthers. E. Ovary. F. Pistil and calyx.

Rhododendron Schlippenbachii, *Maximowicz* (Plate II.).
A. Fruiting shoot with foliage.

RHODODENDRON SCHLIPPENBACHII, *Maximowicz* in *Bull. Acad .Sci. St. Pétersb.*, vol. 15, 266 (1870); in *Mél. Biol.*, vol. 7, 333 (1870).

(Syn.: AZALEA SCHLIPPENBACHII, *Kuntze.*)

ILLUSTRATION—Hooker f. in *Bot. Mag.*, t. 7373 (1894).

HABIT: densely branched shrub 3-15 ft. tall, with whorled or irregular upright rigid branches; shoots glandular-pubescent and pale brown when young, grey and glabrous the second year.

FLORAL WINTER-BUDS: ovoid, with 9-12 ovate obtuse scales appressed pubescent along the middle and toward the apex, the lower ones often aristate.

LEAVES: deciduous, in whorls of 5 at the end of the branchlets, obovate or broad-obovate, 2-3½ in. long and 1¼-2¾ in. wide, truncate, rounded or emarginate and mucronate at the apex, cuneate at base, slightly undulate on the margin, sparsely pubescent on both sides at first, later glabrous except on the under side of the principal veins, dark green above, pale beneath, changing in autumn to yellow, orange and crimson; petiole ½-⅙ in. long, flattened, setose or glandular-pilose.

INFLORESCENCE: 3-6-flowered; flowers expanding with or immediately before the leaves; pedicels ¼-⅗ in. long, glandular-pilose.

CALYX: with ovate green lobes, about ⅕ in. long, glandular-pilose, persistent.

COROLLA: broadly rotate-funnelform, 2¼-3¼ in. wide, pale to rose-pink, with spreading broad-ovate lobes, the upper ones spotted red-brown.

STAMENS: 10, unequal, the longest as long as the corolla; filaments pubescent below the middle.

PISTIL: longer than corolla; ovary glandular; style glandular-pilose below the middle.

CAPSULE: oblong-ovoid, about ¾ in. long, glandular.

HABITAT: Korea, north-eastern Manchuria and central Japan.

A distinct and handsome species, characterised by the large rose-coloured flowers and large obovate leaves in whorls of five.

RHODODENDRON WEYRICHII, *Maximowicz* in *Mém. Acad. Sci. St. Pétersb.*, ser. 7, vol. 16, no. 9, p. 26, t. 2, figs. 1-6 (*Rhodod. As. Or.*) (1870).

(Syn.: R. SHIKOKIANUM, *Makino*; AZALEA WEYRICHII, *Kuntze*.)

ILLUSTRATION—Nakai, *Fl. Sylv. Kor.*, vol. 8, t. 16 (1919).

HABIT: vigorous shrub, 3-15 ft. tall, often tree-like, with rather short ascending, partly whorled branches; shoots yellow-brown, clothed with ferrugineous pubescence at first, becoming glabrous and grey and finally dark purple.

FLORAL WINTER-BUDS: conic-ovoid, about $\frac{1}{2}$ in. long, with about 10 acute scales clothed with appressed yellow-brown silky hairs.

LEAVES: deciduous, chartaceous, 2 or 3 at the end of the branchlets, scattered on vigorous shoots, suborbicular or broad-ovate to rhombic-ovate, $1\frac{1}{2}$-$3\frac{1}{4}$ in. long and $\frac{4}{5}$-$2\frac{1}{3}$ in. broad, subacute or obtuse and mucronate, broad-cuneate or rounded at base, at first covered like the petioles with rufous-brown pilose hairs which soon disappear; petiole $\frac{1}{4}$-$\frac{1}{2}$ in. long, soon glabrous.

INFLORESCENCE: 2-4-flowered; flowers expanding before or with the leaves; pedicels $\frac{1}{4}$-$\frac{1}{3}$ in. long, covered with rufous-brown pilose hairs.

CALYX: with minute teeth, rufous-pilose.

COROLLA: rotate-funnelform, $1\frac{1}{2}$-$2\frac{1}{3}$ in. across, red, with short narrow tube and spreading oval lobes, glabrous.

STAMENS: 6-10, unequal, shorter than corolla; filaments glabrous or pubescent toward the base.

PISTIL: about as long as corolla; ovary densely rufous-pilose; style glabrous or pubescent toward the base, curved.

CAPSULE: cylindric or oblong-ovoid, $\frac{3}{5}$-$\frac{4}{5}$ in. long, furrowed, clothed with villous appressed pubescence.

HABITAT: southern Japan and on the Korean island Quelpaert.

This differs from the related species by the almost brick-red colour of its flowers.

AZALEA SERIES

SUBSERIES TASHIROI

This subseries contains only the following species and is chiefly characterised by its pubescence of appressed flattened hairs, by the persistent leaves in whorls of 2 or 3 at the end of the branchlets and by its terminal floral winter-buds producing flowers together with leafy branchlets. The species had been previously placed with the true Rhododendrons, but the character of its pubescence is that of the Azalea series, and the fact that flowers and leafy shoots are produced from the same bud shows its close relation to the subseries Obtusum and Schlippenbachii, between which it takes an intermediate position ; it agrees with the former subseries in its pubescence, but differs in the leaves being borne at the end of the branchlets in clusters of two or three, by which character it agrees with the latter subseries from which it differs, however, in having the pubescence of the Obtusum subseries, in the persistent leaves and the campanulate, not more or less rotate corolla.

RHODODENDRON TASHIROI, *Maximowicz.*

A. Flowering shoot with foliage and fruit of past year. B. Stamen. C. Anther.
D. Ovary. E. Pistil.

RHODODENDRON TASHIROI, *Maximowicz* in *Bull. Acad. Sci. St. Pétersb.*, vol. 31, 64 (1887); in *Mél. Biol.*, vol. 12, 489 (1887).

Illustration—Komatsu in *Icon. Pl. Koisikav.*, vol. 3, t. 203 (1917).

Habit: much-branched shrub 5-15 ft. tall; shoots with scattered appressed flattened brown hairs, soon glabrous, the weaker branchlets nearly glabrous even when young.

Floral Winter-buds: ovoid, $\frac{1}{2}$-$\frac{3}{8}$ in. long, with about 9 broad-ovate rounded and slightly mucronulate scales ciliate and strigose along the middle or only toward the apex, otherwise glabrous.

Leaves: persistent, coriaceous, in pairs or in threes at the end of the branchlets, elliptic-obovate or rhombic-obovate to oblong-obovate or oblong-elliptic, $1\frac{1}{4}$-$2\frac{1}{2}$ in. long and $\frac{5}{8}$-$1\frac{1}{8}$ in. wide, acute or short-acuminate, broad-cuneate at base, minutely crenulate, at first clothed on both sides with appressed grey-brown hairs, soon glabrous above and shining green and wrinkled, with impressed midrib, paler beneath with scattered appressed flattened brown hairs, finally usually glabrous except on the midrib; petiole $\frac{1}{8}$-$\frac{1}{4}$ in. long, densely clothed with appressed flattened brown hairs.

Inflorescence: 2-3-flowered; pedicels, $\frac{1}{4}$-$\frac{1}{2}$ in. long, densely clothed with loosely appressed, flattened shining grey-brown hairs, mostly hidden by the subpersistent bud-scales.

Calyx: with 5 minute teeth, densely clothed with strigose brown hairs.

Corolla: campanulate-funnelform, 1-$1\frac{1}{2}$ in. long and as wide, pale rose-purple, spotted maroon-purple, with broad-oval spreading lobes rounded or emarginate, shorter than the wide tube, glabrous.

Stamens: 10, rarely to 12, unequal, the longest nearly as long as the corolla, nearly straight; filaments glabrous.

Pistil: as long as corolla; ovary densely clothed with appressed flattened shining brown hairs; style glabrous, thickened toward the apex.

Capsule: narrow-ovoid, $\frac{1}{3}$-$\frac{1}{2}$ in. long, clothed with appressed flattened brown hairs.

Habitat: Liukiu and Kawanabe Islands and southern Japan.

Apparently not yet introduced.

BARBATUM SERIES

The majority of the species included in the series Barbatum show certain distinctive indumental characters. As the name suggests, there is a marked tendency to the development of long-stalked glands or coarse bristles. In some cases, as far as the leaf under surface is concerned, there is a characteristic localisation of the hairs or glands along the midrib. The association of these bristly rhododendrons as one series is not dependent solely on this indumental feature, for other characters serve to show that there is here a fairly natural group.

The series nearest allied is Arboreum. The parallelism is interesting. The Himalayan members of the Barbatum subseries have much in common with the Himalayan members of the subseries Arboreum, especially as regards the tall habit and the flower structure, but the texture and indumentum of the foliage are different. Likewise the subseries Maculiferum shows in its floral characters undoubted affinity with the series Arboreum, subseries Argyrophyllum, which occupies more or less the same geographical area.

Less closely allied is the series Irroratum, where the development of a definite indumentum and of large glands or bristles is practically absent.

A more remote relationship is with the Thomsonii series, in which series certain aberrant members of the Selense subseries show an approach to such members of the Barbatum series as *R. hirtipes*, *R. spilotum*, and their associates.

There is also a suggestion of affinity with the Taliense series in the case of *R. crinigerum*, which in its indumentum and gland-fringed calyx recalls the features of certain members of the subseries Adenogynum.

The Barbatum series is divisible into four subseries by fairly well defined criteria and the geographical distribution is in accordance. The subseries Barbatum may be taken as the centre. It is entirely Himalayan. Its flower characters recall those of Arboreum. The subseries Glischrum and Crinigerum represent the series in Yunnan and south-eastern Tibet, and their kinship with the central subseries is obvious. In those three subseries the leaves tend to the elongated lanceolate type and the calyx is usually well-developed. In contrast, the subseries Maculiferum has smaller leaves and a much reduced calyx. It occupies an area further to the east, reaching to Formosa. This subseries undoubtedly forms a link with the subseries Argyrophyllum, but the indumental characters are very different and point to a Barbatum affinity. H. F. T.

BARBATUM SERIES

KEY TO THE SUBSERIES

A. Calyx large, 5-25 mm. :
  B. Leaf apex pointed.
    Indumentum none, or a thin or thicker loose wool, tending to patches.
    Pedicels 5-10 mm. ; truss compact.
    Calyx 5-10 mm., more or less regular, lobes obtuse.
    Corolla red to crimson.
    Distribution : Himalaya . . . . **Barbatum.**
  BB. Leaf apex pointed or rounded.
    Indumentum of scattered coarse glandular hairs, rarely none, or thinly woolly.
    Pedicels 20-30 mm. ; truss lax.
    Calyx 10-30 mm., more or less irregular, lobes narrow.
    Corolla white, rose, rarely crimson.
    Distribution : Yunnan, Burma, S.E. Tibet . **Glischrum.**
  BBB. Leaf apex pointed.
    Indumentum a close continuous felt.
    Pedicels 20-30 mm. ; truss more or less compact.
    Calyx 10-15 mm., more or less regular, lobes narrow.
    Corolla white to rose.
    Distribution : Yunnan, S.E. Tibet . **Crinigerum.**
AA. Calyx very small, 1-3 mm. (except *R. longesquamatum*).
  Frequently peculiar localisation of bristles or hairs on midrib. Truss loose, few-flowered.
  Corolla white, rose or purple (red in *R. strigillosum*).
  Distribution : central and eastern China, Formosa **Maculiferum.**

BARBATUM SERIES

SUBSERIES BARBATUM

The members of this small central subseries are all confined to the Himalaya. The most characteristic features are : the tree habit, the large leaves with coarse bristles on the petioles (except *R. imberbe*), the large compact truss, and the deep-red tubular flowers with conspicuous nectar pouches.

With the exception of *R. imberbe*, which is somewhat aberrant, the remaining three species are very closely related to one another and differ chiefly in the degree of development of indumentum and its relative persistence.

In the possession of coarse bristles they invite comparison with the bristly members of the subseries Glischrum, but they differ from members of that subseries in the shape and colour of the corolla. From the subseries Maculiferum they are very readily distinguished by the larger habit, the larger leaves, by the compact truss, by the flower shape and colour, as also by the coarseness of the localised bristles. Only in *R. strigillosum* of the subseries Maculiferum is there an approach to the flower shape and colour of the bristly members of the subseries Barbatum, but *R. strigillosum* is readily distinguished by the leaf shape and the scattered setae covering the whole of the leaf under surface. The small subseries Crinigerum is distinct in the felted pad of indumentum and in its marked glandularness.

KEY TO THE SPECIES

A. Young shoots and petioles coarsely bristly :
  B. Leaf under side at maturity glabrous . . **barbatum.**
  BB. Leaf under side at maturity thinly woolly . **Smithii.**
  BBB. Leaf under side at maturity densely woolly **argipeplum.**
AA. Young shoots and petioles glabrous . . **imberbe.**

RHODODENDRON ARGIPEPLUM, *Balf. f. & Cooper* in *Notes R.B.G. Edin.*, vol. 9 (1916), 213.

ILLUSTRATION—

HABIT : a shrub of 6 ft. ; shoots a year old about 5 mm. diameter, furnished with long setae mixed with shorter glands.

LEAVES : lamina oblong-oblanceolate, 7-12 cm. long, 4-5·5 cm. broad ; apex abruptly acuminate ; margin at maturity asperous ; base narrowly cordulate ; upper surface at maturity glabrous, midrib deeply grooved and more or less setose towards the petiole, primary veins about 14 on each side deeply impressed and more or less clad with setae ; under surface clad with a dense white to tawny woolly indumentum, midrib prominent, primary veins more or less concealed by the indumentum ; petiole about 1·5 cm. long, densely bristly.

INFLORESCENCE : a racemose umbel of about 10 flowers ; rhachis about 1·5 cm. long, glabrous.

PEDICELS : about 7 mm. long, clad with short setose glands.

CALYX : cup-like, about 5 mm. long, split to beyond the middle into 5 ovate or semi-rounded obtuse lobes which are sparsely glandular on the back.

COROLLA : campanulate, 3·5 cm. long ; lobes 5, unequal, rounded, emarginate, about 1 cm. long, 1·7 cm. broad.

STAMENS : 10, unequal, about 2·3 cm. long ; filaments glabrous.

PISTIL : about 3 cm. long ; ovary setulose-glandular ; style glabrous.

CAPSULE : about 2 cm. long, 5 mm. broad, slightly curved, setulose-glandular, 8-celled.

HABITAT : Bhutan ; Pumthang. Under Abies at 11,000 ft. altitude.

Flowers of this are imperfectly known, but the character of leaves and indumentum indicate a close affinity with *R. barbatum* but yet specifically distinct. The outstanding feature is the dense persistent indumentum, loosely woolly, not felted as in *R. crinigerum.*

RHODODENDRON BARBATUM, *Wall.* (Copied from Hooker's *Sikkim Rhododendrons*, t. 3.)

A. Truss and surrounding foliage (reduced a little more than ½). B. Single flower and bract (reduced). C. Stamen. D. Pistil. E. Section of ovary. F. Fruit with persistent calyx (about ½ natural size).

RHODODENDRON BARBATUM, *Wall.* in *Wall. cat.*, 757 (G. Don, *Gen. Syst.*, vol. 3, 844).

(R. LANCIFOLIUM, *Hook. f.*)

ILLUSTRATION—Hook. f. *Rhodo. Sikkim Himal.* (1849), t. 3.

HABIT: a tree 30-60 ft. high, branched from the base; in cultivation much smaller; shoots bristly, with long stiff setae which may or may not persist for several years.

LEAVES: lamina elliptic-lanceolate, 10-20 cm. long, 4-7 cm. broad; apex acute; base obtuse to semi-rounded or cordulate; margin reflexed and roughened; upper surface rugulose, at maturity glabrous, shining, midrib deeply grooved, primary veins 14-16 on each side deeply impressed; under surface at first clad with a loose woolly tomentum which, as the leaf gets older, falls away, mature leaves pale yellowish-green, glabrous, midrib prominent, towards the base bristly, primary veins prominent; petiole 1-1·5 cm. long, thick, clad with long gland-tipped bristles.

INFLORESCENCE: a compact rounded umbel, 10-15 cm. across, the very sticky bud-scales and bracts persisting during flowering; rhachis 2 cm. long, glabrous.

PEDICELS: 1-1·5 cm. long, glabrous.

CALYX: 1-1·5 cm. long, glabrous, consisting of a basal thickened greenish rim and 5 irregular lobes, green below, tinted like corolla above, crenulate or irregularly cut.

COROLLA: tubular campanulate, 3 cm. long, deep rich crimson or blood colour, fleshy, ridged towards base with 5 nectar pouches which are stained black-crimson within; lobes 5, 1·5 cm. long, 2 cm. broad, rounded.

STAMENS: 10, clustered around style, 1-2·3 cm. long; filaments white glabrous; anthers purple-black.

PISTIL: about 2·3 cm. long; ovary conoid, about 6 mm. long, greenish-white, densely clad with ascending long-stalked glands; style white glabrous; stigma hardly broader than style, pink tinted.

CAPSULE: oblong-cylindric, about 2-2·5 cm. long, 6 mm. broad, setose or roughened by bases of fallen setae, 6-8-chambered.

HABITAT: Nepal; Gossain Than. Sikkim Himalaya; summit of Tonglo. At 10,000 ft. altitude.

This has been well known in cultivation for many years and is somewhat variable in the development of glandular bristles on the young shoots and petioles. *R. lancifolium* is generally regarded as a small-leaved and small-flowered form of the species.

RHODODENDRON IMBERBE, *Hutch.* in *Gard. Chron.*, vol. 83, 3rd ser. (1928), 214.

ILLUSTRATION—*Gard. Chron.*, vol. 83, 3rd ser. (1928), 214, fig. 106.

HABIT : a much branched shrub about 8 ft. high ; branches of one year glabrous ; those below inflorescences 5 mm. diameter.

LEAVES : lamina obovate-elliptic, 8-12 cm. long, 4-5 cm. broad ; apex acuminate ; base rounded or subcordate ; upper surface dark green, glabrous, midrib deeply grooved, primary veins 15 on each side impressed ; under surface pale, glabrous, midrib very prominently raised, primary veins distinct ; petiole 1-1·5 cm. long, slightly grooved above, glabrous.

INFLORESCENCE : a racemose umbel of about 15 flowers ; rhachis 1·5 cm. long, whitish-grey, pubescent.

PEDICELS : 1-1·3 cm. long, pale green, glabrous or sparingly glandular.

CALYX : saucer-shaped, about 5 mm. long, finely glandular-pilose outside at the base ; lobes 5, ciliate, broadly oblong, pale greenish-white with a red blotch within at base of each lobe.

COROLLA : tubular-campanulate, 4-4·5 cm. long, red, marked inside with lines of darker spots between the lobes and blotched within the 5 nectar pouches ; lobes 5, sub-orbicular, emarginate, 2 cm. long, 2-2·5 cm. broad.

STAMENS : 10, 2-3 cm. long ; filaments densely pubescent over lower third of their length.

PISTIL : 3·5 cm. long ; ovary 7 mm. long, oblong, densely clad with short-stalked glands with which are mixed fewer fasciate hairs ; style pale greenish-white, glabrous.

CAPSULE : 2 cm. long, rusty-pilose, 8-9-chambered.

HABITAT : West Central Himalaya ; Kumaon, Jhuni. At 9000 ft. altitude.

As the name indicates, the species is free from bristles. It is, however, undoubtedly of Barbatum affinity.

RHODODENDRON SMITHII, *Nutt. MS.* (descript. Hook. in *Bot. Mag.*, vol. 85 (1859), t. 5120).

Illustration—*Bot. Mag.*, vol. 85 (1859), t. 5120.

Habit : a branching shrub or small tree of 10-15 ft. ; the young shoots and petioles clad with long stiff bristles the majority of which have glandular tips ; the bristles persist on the shoots for several years ; bud-scales exceedingly sticky.

Leaves : lamina oblong-lanceolate, 9-15 cm. long, 3-4·5 cm. broad ; apex acute, cuspidate ; base obtuse to cordulate ; margin reflexed and at first ciliate, later somewhat asperous ; upper surface a rich green, at maturity glossy and glabrous, midrib and primary veins deeply grooved, the latter 12-15 on each side ; under surface clad with a loose greyish-white woolly tomentum, not entirely concealing the leaf epidermis, which is punctulate with short-stalked glands, midrib prominent, woolly-floccose and glandular, primary veins evident ; petiole stout, rounded, clad with long bristles which extend for some distance along the midrib both above and below.

Inflorescence : a compact corymb of 10-16 flowers ; rhachis about 2·5 cm. long.

Pedicels : stout, 1-1·5 cm. long, pink tinted, glandular, expanding into the green calyx cup.

Calyx : barely 1 cm. long, deeply cut into 5 unequal crimson lobes, oblong-ovate or rounded, sparsely glandular on the back, the margin somewhat lacerate and gland-fringed.

Corolla : tubular campanulate, 4-4·5 cm. long, fleshy, deep red, with 5 darker crimson blotches in the basal nectar pouches ; lobes 5, broadly rounded, about 1 cm. long, 2 cm. broad, emarginate.

Stamens : 8-10, clustered around style, 2·5-3 cm. long ; filaments glabrous.

Pistil : about 3 cm. long ; ovary conoid truncate, 4 mm. long, clad with ascending clavate glands of varying length ; style glabrous ; stigma small, lobulate, dark crimson.

Capsule :

Habitat : Eastern Sikkim and Bhutan. At 8000-12,000 ft. altitude.

R. Smithii is not far removed from *R. barbatum*, and is often referred to as simply a variety of it. It is usually more bristly and somewhat later in time of flowering. The deeply impressed primary veins and the somewhat convex upper side of the leaf give it a more bullate appearance than that of *R. barbatum*. The loose open tomentum becomes patchy on old leaves. The bud-scales are extremely sticky.

BARBATUM SERIES

SUBSERIES CRINIGERUM

A small subseries of two closely related species, both confined to Yunnan and adjacent parts of South-Eastern Tibet.

Within the series the subseries is very readily distinguished by the felt-like indumentum, by the loose truss, by the funnel-campanulate corolla with its conspicuous blotching, and by the narrow pointed lobes of the gland-fringed calyx.

These characters suggest some affinity with the Taliense series, subseries Adenogynum, but the conspicuous gland-tipped bristles of the shoots and petioles indicate a very close alliance also with the Glischrum subseries of the series Barbatum. It is essentially the character of the indumentum in these species which invites association with the series Taliense, but the marked development of bristles on the vegetative parts leads the observer in the direction of Barbatum. It is difficult to decide which of these two characters is the more satisfactory phyletic mark. The two species certainly form a link between the two series.

KEY TO THE SPECIES

A. Leaves lanceolate to oblanceolate, leaf apex very elongate **crinigerum.**

AA. Leaves oblong to sub-elliptic, leaf apex not elongate **Bainbridgeanum.**

RHODODENDRON BAINBRIDGEANUM, *Tagg & Forrest, sp. nov.*

Illustration—

Habit: a shrub of 3-6 ft.; young shoots clad with setose glands and fewer floccose hairs; branches below inflorescences about 4 mm. diameter; perulae more or less persistent.

Leaves: lamina oblong-oblanceolate or obovate or sub-elliptic, 6-12 cm. long, 2-4·5 cm. broad; apex obtuse, beaked; base obtuse to rounded; upper surface minutely rugulose, at maturity glabrous, or with vestiges of floccose hairs which persist more definitely in the grooved midrib, primary veins 12-14 on each side impressed; under surface clad with a thin loose felt olive-grey to a deeper tawny colour more or less detersile, midrib prominently raised more or less floccose and glandular, primary veins not conspicuous; petiole 1-1·5 cm. long, grooved above, densely clad with longer and shorter setose-glands mixed with fewer floccose hairs.

Inflorescence: a racemose umbel of 6-8 flowers; rhachis about 5 mm. long, floccose.

Pedicels: about 2·5 cm. long, slender, densely clad with glands, many of them long and setulose, others shorter.

Calyx: variable in size, 4-9 mm. long, split to near the base into 5 elongate triangular lobes, setose-glandular on the back and gland-fringed.

Corolla: campanulate, about 3·5 cm. long, white or creamy yellow, at times faintly flushed rose, blotched crimson at the base and more or less spotted on the posterior side.

Stamens: 10, unequal, 2-3 cm. long; filaments puberulous at base.

Pistil: about 3 cm. long; ovary conoid, about 4 mm. long, densely clad with ascending long-stalked glands; style more or less glandular at the base.

Capsule: cylindric, slightly curved, blackish, about 2 cm. long, 4 mm. broad, 5-7-chambered, more or less rough with withered glands.

Habitat: South-Eastern Tibet; Salween—Kiu chiang Divide. In open thickets and on margins of conifer and mixed forests at 10,000-13,000 ft. altitude.

Comparable with *R. crinigerum*, but the indumentum is thinner, the perulae much less prominent, the leaf-shape different, and the truss much laxer and fewer-flowered.

RHODODENDRON CRINIGERUM, *Franch.* in *Journ. de Bot.*, vol. 12 (1898), 260.

(R. IXEUTICUM, *Balf. f. & W. W. Sm.*)

ILLUSTRATION—

HABIT : a shrub of 8-12 ft. ; branches a year old very viscid, with long-stalked setiform glands ; shoots below inflorescences about 6 mm. diameter ; perulae persisting for some years.

LEAVES : lamina lanceolate or oblanceolate, 7-18 cm. long, 2-4 cm. broad ; apex acuminate ; base obtuse ; upper surface (young leaves clothed with floccose woolly hairs mixed with stalked glands) at maturity dark green, somewhat glossy, glabrescent, midrib grooved, primary veins grooved, 15-18 on each side ; under surface clad with a dense felt in colour varying from whitish to a deep buff colour, midrib prominent, rufescent, densely glandular, primary veins concealed or not very prominent ; petiole 1·5 cm. long, viscid with setose glands.

INFLORESCENCE : a racemose umbel of about 12 flowers.

PEDICELS : 3 cm. long, densely clad with setose glands and fewer shorter hairs.

CALYX : cup-like, split almost to the base into 5 lobes ; lobes oblong, ligulate, up to 1 cm. long, densely setose-glandular and gland-fringed.

COROLLA : campanulate, 3-4 cm. long, white or white flushed rose with a deep basal blotch ; lobes 5, rounded, emarginate, 1 cm. long, 1·5 cm. broad.

STAMENS : 10, unequal, 1·5-3 cm. long ; filaments puberulous at base.

PISTIL : about 3 cm. long ; ovary 3 mm. long, blunt, densely clad with ascending stalked glands ; style setulose-glandular and sometimes also hairy at the base.

CAPSULE : about 1·5 cm. long, 5 mm. broad, slightly curved, densely glandular, 6-chambered, calyx more or less persistent.

HABITAT : South-Eastern Tibet and North-Western Yunnan. In open situations amongst boulders and open pine forests at 10,000-13,000 ft. altitude.

A very distinct species in the series by reason of its dense indumentum, conspicuous glands, persisting perulae clothing the young shoots and rugose glossy leaves. In many ways it recalls the Adenogynum subseries, and is thus a link between Barbatum and Taliense. The flower characters indicate the proximity of the species to *R. glischrum*. There is a variety, var. *euadenium*, which is much more glandular but with a thinner indumentum.

BARBATUM SERIES

SUBSERIES GLISCHRUM

The members of this subseries find their fullest development in West Yunnan and the adjoining parts of North-Eastern Upper Burma and South-Eastern Tibet. One species, *R. hirtipes*, from the eastern fringe of the Himalaya, shows an interesting extension of the subseries. Glandular bristles are a characteristic feature of the vegetative parts, especially on the young shoots and petioles. In this respect the subseries invites comparison with the subseries Barbatum. The degree of bristliness and the distribution of the bristles on the leaf afford a convenient mark for the grouping of the species. In some species the bristles are practically confined to the petioles with a few only on the midrib; in others they are freely developed on the midrib but absent from the rest of the leaf under surface; while in others again they are freely scattered over the whole of the leaf under surface. The large leaves, the large flowers, and the coarse gland-bristliness are in contrast to the smaller leaves, smaller flowers, and smaller truss of the majority of the members of the subseries Maculiferum, in which subseries only *R. strigillosum* and *R. longesquamatum* have flowers comparable in size to those of the subseries Glischrum. The calyx also is relatively larger than is found in the subseries Maculiferum. The subseries Crinigerum is readily distinguished from the present subseries by the leaf indumentum.

Some members of the subseries Glischrum attain tree-like dimensions in the wild state, and it is certainly this subseries which is most clearly related to the central subseries Barbatum. The other two subseries are more divergent.

KEY TO THE SPECIES

A. Pedicels eglandular; calyx 20-30 mm. long **diphrocalyx.**
AA. Pedicels glandular; calyx 10-15 mm. long:
B. Mature leaf-blade without bristles . . . **spilotum.**
BB. Mature leaf-blade with bristles only on midrib:
C. Leaf apex shortly acuminate . . . **habrotrichum.**
CC. Leaf apex evenly rounded . . . . **hirtipes.**
BBB. Mature leaf-blade with many scattered bristles:
C. Bristle hairs on both sides of leaf . . . **rude.**
CC. Upper surface without bristles, glabrous or glandular and hairy:
D. Secondary veins of underside clothed with bristles only **glischrum.**
DD. Secondary veins of underside clothed with bristles and whitish indumentum . . . **glischroides.**
DDD. Secondary veins of underside clothed with bristles and peculiar vesicular hairs . . . **vesiculiferum.**

RHODODENDRON DIPHROCALYX, *Balf. f.* in *Notes R.B.G. Edin.*, vol. 11 (1919), 55.

(R. BURRIFLORUM, *Balf. f. & Forrest.*)

ILLUSTRATION—Millais, *Rhododendrons*, 2nd ser. (1924), 152.

HABIT: a shrub of 5-15 ft., with young stems and petioles clad with long setose glands and smaller floccose hairs; branches below inflorescences about 7 mm. diameter.

LEAVES: lamina oblong-oval, oval or obovate, 6-15 cm. long, 2·5-5·5 cm. broad; apex obtuse, somewhat cuspidate; base obtuse to rounded; upper surface bright green, at maturity glabrous except in the groove of the midrib, where towards the leaf base there are found setulose glands and floccose hairs, primary veins 12-14 on each side slightly impressed; under surface pale glaucous green, to the eye glabrous but under magnification sparsely dotted with small floccose hairs, midrib prominent and clad towards the base with setose glands and small floccose hairs, primary veins slightly raised; petiole 1·5-2 cm. long, purplish, clad with long setose glands and floccose hairs.

INFLORESCENCE: an umbel of about 20 flowers; rhachis red, about 1·5 cm. long, more or less floccose.

PEDICELS: stout, about 2 cm. long, densely pubescent with floccose hairs, eglandular.

CALYX: very large and one-sided, fleshy, bright red, blotched and spotted on the posterior side, the cup part at the back as much as 1·5 cm. long, at the front 1-2 mm. long; lobes 5, unequal, ciliate with floccose hairs, posterior lobes as much as 1·3 cm. long, giving a total calyx length of about 2·5 cm., anterior lobes rounded, 2 mm. long, 5 mm. broad.

COROLLA: broadly tubular campanulate, fleshy, about 4 cm. long, bright red or light crimson with crimson spots and basal blotch; lobes 5, rounded, emarginate, 1·5 cm. long, 2·5 cm. broad.

STAMENS: 10, unequal, 2-3·5 cm. long; filaments stout, puberulous over lower part.

PISTIL: about 3·5 cm. long; ovary conoid, grooved, about 5 mm. long, densely tomentose with fasciate hairs; style for about two-fifths of its length tomentose, with hairs like those covering the ovary. In some forms glands are also present on ovary and style.

CAPSULE:

HABITAT: Western Yunnan; Shweli—Salween Divide. Scrub-clad slopes and thickets at 10,000-11,000 ft. altitude.

This species has a characteristic calyx with a striking unilateral development. Its nearest ally is *R. habrotrichum*, from which it can be distinguished among other characters by the glaucous leaf underside.

RHODODENDRON EROSUM, *Cowan* in *Notes R.B.G. Edin.*, vol. 19 (1937), 225.

Illustration—

Habit : a shrub of 10-20 ft. ; young shoots whitish-grey, shining, clad with numerous setose glands and here and there vestiges of hairs ; the older shoots smooth, perulae deciduous.

Leaves : lamina oval, oblong-oval or obovate, variable in size, 8-16·5 cm. long, 3-9 cm. broad ; apex obtuse or broadly rounded, cuspidate ; base rounded to cordate ; upper surface somewhat rugose, almost glabrous, midrib deeply impressed, with floccose hairs towards the base ; under surface clad with a patchy evanescent indumentum of whitish or yellowish brown hairs intermixed with short glands, midrib prominent ; primary veins 10-16 ; petiole stout, 1-2 cm. long, bristly, with gland-tipped setae.

Inforescence : an umbel of 12-15 flowers ; rhachis about 1·5 cm. long, puberulous.

Pedicels : about 1 cm. long, clad with long stalked glands.

Calyx : a fleshy 5-lobed cup, the lobes unequal, fleshy, glandular, about 4 mm. long, 3 mm. broad, margin membranous, ciliate with glands.

Corolla : campanulate, about 3 cm. long, rose pink to very deep crimson ; lobes 5, rounded, about 1 cm. long, 1·5 cm. broad, deeply emarginate.

Stamens : 10, unequal, 2-2·5 cm. long ; filaments flattened, glabrous.

Pistil : about 2·6 cm. long ; ovary oblongoid, about 5 cm. long, very densely clad with long ascending setose glands ; style glabrous.

Capsule : oblong, straight, 1·5-2 cm. long, 6 mm. broad, included in the persistent calyx.

Habitat : Southern Tibet, Chayul Chu, Lung, Tsari Chu. In Rhododendron forest among bamboos, birch and fir at 10,000-12,000 ft.

Closely allied to *Rh. exasperatum*, differing in that the bud scales do not persist, and the softly woolly indumentum, by no means bristly, which disappears as the leaf ages ; midrib neither barbate nor strigose towards the base ; petiole longer ; calyx lobes short and very irregular.

RHODODENDRON GLISCHROIDES, *Tagg & Forrest, sp. nov.*

Illustration—

Habit : a shrub of 6-15 ft, ; shoots and petioles densely bristly with gland-tipped setae which persist for several years ; perulae more or less persistent ; branches below inflorescences about 5 mm. diameter.

Leaves : lamina oblong-lanceolate or oblanceolate, 7-15 cm. long, 2·5-4·5 cm. broad ; apex acuminate ; base narrowly rounded to cordulate ; margin ciliate ; upper surface somewhat rugose, at maturity glabrous except for a few setae in vein grooves, midrib deeply grooved, primary veins 18-23 on each side deeply impressed ; under surface densely clad all over with long crisped setae and along the veins with shorter white floccose hairs, midrib prominent, primary veins raised ; petiole stout, 1-2 cm. long, bristly with long and shorter gland-tipped setae which extend a short distance along the midrib above and below.

Inflorescence : a loose umbel of 6-10 flowers ; rhachis about 1 cm. long, glandular and tomentose.

Pedicels : about 2 cm. long, densely clad with setose glands of varying length.

Calyx : variable in size from 1-2 cm. long, split to near the base into 5 unequal narrowly oblong to lanceolate purplish lobes, glandular-setose on the back and gland-ciliate.

Corolla : campanulate, about 4 cm. long, white or creamy white, more or less flushed rose and marked with a crimson blotch within at the base ; lobes 5, rounded, 2 cm. long, 2·5 cm. broad, emarginate.

Stamens : 10, unequal, 2-4 cm. long ; filaments widened at base and there very hairy.

Pistil : about 4 cm. long ; ovary about 5 mm. long, densely clad with long ascending setose glands ; style glabrous ; stigma small, lobulate.

Capsule : oblong, straight or slightly curved, about 1·5 cm. long, 6 mm. broad, 6-chambered, encased at the base in the persistent calyx.

Habitat : North-Eastern Upper Burma. In thickets and on rocky slopes at 10,000-11,000 ft. altitude.

Akin to *R. glischrum* in habit and in the structure of its flower but differing in the indumentum. The secondary veins are clothed with a fine white coating of hairs in addition to numerous bristles. There is a variety, var. *arachnoideum*, where the development of this white coating proceeds further and more or less covers the whole under surface, giving it a cobwebby look.

RHODODENDRON GLISCHRUM, *Balf. f. & W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 9 (1916), 229.

Illustration—*Bot. Mag.*, vol. 150 (1924), t. 9035.

Habit : a small tree as much as 25 ft. high ; young shoots densely bristly with setose glands ; shoots below inflorescences 1 cm. diameter.

Leaves : lamina oblanceolate, 10-25 cm. long, 2·5-6 cm. broad ; apex acuminate ; margin fringed with glandular setae ; base narrowed and broadly cuneate or narrowly rounded or cordulate ; upper surface bright green, sub-rugulose, glabrescent, but marked more or less with vestiges of glandular setae and floccose hairs, midrib grooved, more or less setose, primary veins about 15 on each side slightly grooved ; under surface pale green, midrib and primary veins prominent, the whole densely hispid with long curved setae more numerous on the veins ; petiole about 2 cm. long, bristly with glandular setae.

Inflorescence : a racemose umbel of about 10 flowers ; rhachis about 1 cm. long, glandular-setose, bud-scales and bracts more or less persistent during flowering, the outer scales with long acuminate tips.

Pedicels : about 3·5 cm. long, densely glandular-setose.

Calyx : about 1·3 cm. long, split almost to the base into 5 lobes ; lobes unequal, oblong obtuse, densely setose-glandular, margins ciliate with setose glands.

Corolla : campanulate, about 4 cm. long, deep rose with a crimson blotch at base ; lobes 5, about 1·5 cm. long, 2 cm. broad, emarginate.

Stamens : 10, very unequal, 1-3 cm. long ; filaments pubescent.

Pistil : about 3·5 cm. long ; ovary 4 mm. long, clad with glandular setae ; style glandular-setose at base.

Capsule : oblong, straight or slightly curved, 1·5-2 cm. long, 4-5 mm. broad, 7-8-chambered, setose-glandular, encased at the base in the persistent calyx.

Habitat : North-Western Yunnan and the adjoining borders of Upper Burma. In open situations in thickets and pine forests at 13,000-14,000 ft. altitude.

This forms the centre of a small group of species found chiefly in South-Eastern Tibet and Yunnan and distinguished by their very hirsute appearance. The leaf under surface bears throughout a copious covering of bristles, many of which are glandular.

RHODODENDRON HABROTRICHUM, *Balf. f. & W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 9 (1916), 232.

Illustration—Millais, *Rhododendrons*, 2nd ser. (1924), 150.

Habit : a shrub of 4-10 ft. ; branches a year old about 7 mm. diameter, densely clad with coarse glandular bristles.

Leaves : lamina leathery, elliptic-oblong, 10-18 cm. long, 4-8 cm. broad ; apex abruptly acuminate ; margin fringed with long setae ; base cordate or rounded ; upper surface dark green, slightly rugulose, midrib deeply grooved, primary veins about 15 on each side distinctly grooved ; under surface pale green, midrib and primary veins prominent, the former more or less bristly towards the leaf base, the rest of leaf surface to the eye glabrous but with magnification punctulate with vestiges of small hairs ; petiole thick, about 2 cm. long, 4 mm. broad, densely bristly with long-stalked glands.

Inflorescence : a compact many-flowered umbel ; rhachis short, glandular-setose and dense tomentose.

Pedicels : about 2 cm. long, glandular-setose.

Calyx : about 1·5 cm. long, glandular-setose, split almost to the base into 5 lanceolate acute lobes with glandular-ciliate margins.

Corolla : funnel-campanulate, as much as 5 cm. long, white or pale rose without markings or faintly blotched ; lobes 5, unequal, rounded, 1·5 cm. long, 2·5 cm. broad, emarginate.

Stamens : 10, unequal, 2-4 cm. long ; filaments widened below and over the lower third puberulous.

Pistil : about 4 cm. long ; ovary cylindric, densely glandular-setulose ; style glandular-setulose over the lower third of length.

Capsule : about 2 cm. long, 5 mm. broad, blackish and glandular-setulose, 6-7-chambered, encased at the base in the more or less persistent calyx.

Habitat : Western Yunnan ; Shweli—Salween Divide. In rhododendron forests and thickets at 10,000 ft. altitude.

This species comes near *R. glischrum*, but the leaf-shape is more ovate and the leaf apex is commonly abruptly acuminate. The bristly hairs of the leaf-blade are confined to the midrib, while in its ally they form a dense covering over the whole under surface of the leaf. *R. diphrocalyx*, another ally, has a very different calyx and the leaves are paler (grey-green) below.

RHODODENDRON HIRTIPES, *Tagg, sp. nov.*

Illustration—

Habit : a gnarled tree of 20-25 ft. ; shoots and petioles bristly with setose glands ; perulae not very persistent.

Leaves : lamina sub-leathery, oblong-oval, oval or broadly elliptic, 6-12 cm. long, 4-7 cm. broad ; apex well rounded, shortly mucronulate ; base rounded to cordulate ; margin at first ciliate, finally asperous, with the bases of fallen cilia ; upper surface glossy, at maturity glabrous, except for a few bristles in the deeply grooved midrib, primary veins about 10 on each side impressed ; under surface paler punctulate with brown dots which are (1) small hairs with vesicular branches, the latter impregnated with a dark secretion, and (2) isolated stalked glands, midrib prominent setulose-glandular, primary veins slightly raised ; petiole 1-2 cm. long, bristly with long setose glands, which extend a short distance along the midrib above and below.

Inflorescence : a somewhat lax umbel of 3-5 flowers.

Pedicels : about 1 cm. long, setulose-glandular.

Calyx : about 8 mm. long, split to near the base into 5 unequal ovate to rounded lobes, the largest about 7 mm. long, and 5 mm. broad, the basal cup densely clad with glands, the lobes sparingly glandular on the back and fringed with glands.

Corolla : campanulate, about 4 cm. long, whitish to rose-pink spotted with carmine dots, broadly striped pink and white outside ; lobes 5, ovate, rounded, 2 cm. long, 2 cm. broad, emarginate.

Stamens : 10, unequal, 1·5-3 cm. long ; filaments puberulous at base.

Pistil : about 3·5 cm. long ; ovary conoid, about 5 mm. long, densely glandular with stalked glands ; style glandular at base.

Capsule :

Habitat : South-Eastern Tibet ; Tsela Dzong, Tsangpo Valley. On steep moss-clad heavily wooded cliffs and shady ravines, at 13,000 ft. altitude.

In the elliptic outline of the leaf which is rounded at each end this species is unusual for the series and recalls certain members of the Thomsonii series, such as *R. rhaibocarpum*. The indumental characters favour its inclusion in the Barbatum series. Its position would appear to lie between *R. habrotrichum* and *R. rhaibocarpum*.

RHODODENDRON RUDE, *Tagg & Forrest, sp. nov.*

Illustration—

Habit : a shrub of 8-9 ft. ; shoots and petioles bristly with long setose glands ; perulae more or less persistent for a year or two.

Leaves : lamina broadly oblanceolate to oblong-obovate, 10-19 cm. long, 4·5-7·5 cm. broad ; apex abruptly acuminate and cuspidate ; margin ciliate ; base rounded or cordulate ; upper surface dark green, markedly hispid with long adpressed setose glands, the gland tip often falling away on mature leaves, midrib deeply grooved, primary veins 16-20 on each side deeply impressed ; under surface paler, clad all over with long crisped setae, many of which have glandular tips, midrib prominent, primary veins also prominent ; petiole stout, about 1·5-2 cm. long, bristly with gland-tipped setae.

Inflorescence : a racemose umbel of about 10 flowers ; rhachis about 1·5 cm. long, pubescent and glandular.

Pedicels : about 3 cm. long, clad with long and shorter setose glands and with fewer floccose hairs.

Calyx : about 1·5 cm. long, consisting of a basal fleshy setose-glandular cup and 5 narrowly oblong lanceolate or strap-shaped lobes about 1·3 cm. long, 2 mm. broad, obtuse at the apex, clad on the back with setose glands and ciliate at the margin with glands.

Corolla : openly campanulate, 2·5-3 cm. long, purplish-crimson with a darker line running from the apex of each lobe ; lobes 5, oblong to rounded, 1·2 cm. long, 1-1·4 cm. broad.

Stamens : 10, unequal, 1·2-2·5 cm. long ; filaments hairy over the lower 5 mm. of their length.

Pistil : about 2·5 cm. long ; ovary ovoid, about 5 mm. long, densely clad with long ascending setose glands and fewer floccose hairs, 6-chambered ; style setose-glandular and floccose for about half its length.

Capsule : oblong, about 1·5 cm. long, 5 mm. broad, almost included in the persistent calyx.

Habitat : North-Western Yunnan ; Salween—Kiu chiang Divide. In thickets at 12,000 ft. altitude.

This species is closely akin to *R. glischrum* but is more hispid than that species, the upper surface of the leaf being markedly bristly. The leaf is broad for its length, and in shape it recalls that of *R. habrotrichum*. The flowers are small for the series and are conspicuously lined along the corolla lobes.

RHODODENDRON SPILOTUM, *Balf. f. & Farrer* in *Notes R.B.G. Edin.*, vol. 13 (1922), 298.

Illustration—

Habit : a small tree ; branches thin, those below inflorescences about 3 mm. diameter ; young shoots densely setose-glandular.

Leaves : lamina oblong-lanceolate to oblong-elliptic, 6-11 cm. long, 2-4 cm. broad ; apex obtuse, apiculate ; base obtuse to rounded ; upper surface slightly rugulose, glistening, midrib grooved, primary veins 12-14 on each side slightly impressed ; under surface pale, to the eye glabrous but under magnification punctulate with minute glands, midrib prominent, sparsely glandular, primary veins distinct, slightly raised ; petiole about 1 cm. long, setose-glandular.

Inflorescence : a racemose umbel of about 8 flowers ; rhachis about 1 cm. long, glandular.

Pedicels : slender, 2-3 cm. long, setulose-glandular.

Calyx : about 8 mm. long, setulose-glandular ; lobes 5, elongate-triangular with obtuse apex, about 5 mm. long, glandular on the back and fringed on margin with stalked glands.

Corolla : funnel-campanulate, about 4 cm. long, pink with a basal blotch of crimson ; lobes 5, rounded, about 2 cm. long, 2 cm. broad.

Stamens : 10, unequal, 2-3 cm. long ; filaments widened at the base and there puberulous with glutinous hairs ; anthers black.

Pistil : about 3 cm. long ; ovary conoid, about 4 mm. long, densely clad with long-stalked glands ; style setose-glandular at the base, hardly expanded below the small stigma.

Capsule :

Habitat : North-Eastern Upper Burma ; N'Maikha—Salween Divide, Nyitadi. In alpine woodland.

This is one of the least bristly members of the series. Like *R. hirtipes*, it shows a certain kinship with aberrant members of the Thomsonii series, such as *R. setiferum* and *R. esetulosum*.

RHODODENDRON VESICULIFERUM, *Tagg, sp. nov.*

Illustration—

Habit : a small gnarled shrub or medium-sized tree ; shoots and petioles densely bristly with gland-tipped setae.

Leaves : lamina oblong-lanceolate to oblong-oblanceolate, 8-16 cm. long, 2-5·5 cm. broad ; apex abruptly acuminate ; base rounded to cordulate ; margin ciliate ; upper surface markedly rugulose almost bullate, at first sparsely floccose and sparsely glandular-setose, finally glabrous, midrib deeply grooved, primary veins 20-24 on each side deeply impressed ; under surface paler, the venation very prominent, giving a marked lacunose surface which is clad with isolated crisped setose hairs and along the veins with shorter white hairs, appearing in the dry state as white lines on the veins, midrib very prominent and bristly towards the petiole ; petiole stout, about 1·5 cm. long, coarsely bristly with long gland-tipped bristles and clad also with white vesicular hairs.

Inflorescence : an umbel of 10-15 flowers ; rhachis about 1 cm. long, floccose.

Pedicels : about 2·5 cm. long, densely clad with long crisped glands and with fewer whitish vesicular hairs.

Calyx : about 1 cm. long, purplish, split to near the base into 5 oblong, oval or lanceolate lobes, 7-8 mm. long, 2-4 mm. broad, ciliate with long-stalked glands.

Corolla : campanulate, 3-3·5 cm. long, purplish-rose with a blotch of deep crimson or purple at the base ; lobes 5, broadly rounded, 1·3 cm. long, 1·8 cm. broad, distinctly emarginate.

Stamens : 10, unequal, 1·5-2·5 cm. long ; filaments widened at base and there puberulous.

Pistil : about 3 cm. long ; ovary ovoid, 5 mm. long, truncate, clad with long setose ascending glands and with shorter vesicular floccose hairs ; style setose-glandular and vesicular-floccose for about one-third its length.

Capsule :

Habitat : South-Eastern Tibet ; Seinghku Wang. On steep rocky sheltered slopes at 9000-11,000 ft. altitude.

Allied to *R. glischrum* but coming from further west. It differs in the texture and more rugulose character of the leaf, as well as in the development of peculiar bladdery hairs on the veins of the lower leaf-surface. Similar bladdery hairs occur also on the ovary mixed with glands.

BARBATUM SERIES

SUBSERIES MACULIFERUM

A very distinct subseries which in geographical distribution is somewhat remote from the other members of the series and is widely separated from the central Himalayan species, *R. barbatum*. The majority of the species are found in Szechuan and Hupeh with three outliers in Formosa. It is thus an eastern expression of the series. In contrast to the Himalayan tree-forms (*R. barbatum* and its immediate allies), the species of this subseries are all relatively small shrubs, *R. maculiferum* alone attaining in the wild state the size of a small tree. In the introduction to the Barbatum series attention is drawn to the parallel development of this subseries with those members of the Arboreum series grouped in the subseries Argyrophyllum. These have a similar eastern distribution. In both subseries the tendency to the replacement of the tree habit by the shrub habit and of large compact trusses by smaller laxer ones is noticeable, and both suggest some affinity with the northern subseries Caucasicum. Apart from the shrub habit the most characteristic features of the subseries are : (1) The relatively small lanceolate-pointed leaves with the under surface, to the eye glabrous except on the midrib, where there is a localisation of hairs or glandular bristles or a mixture of hairs and glands. Only in *R. strigillosum* are setae found scattered over the whole of the leaf under surface. (2) The truss compared with *R. barbatum* is a relatively loose and open one. (3) The flower colour is white, pink or magenta, except in *R strigillosum*, and as the subseries name suggests the corolla is distinctly blotched or spotted, with the exception again of *R. strigillosum*.

The least conformable species of the subseries appear to be *R. strigillosum* and *R. longesquamatum*. The former in its large flowers, relatively large leaves with setose under surface, approaches *R. glischrum*. The latter differs from the other members of the subseries in its stout branches, persistent perulae, and large calyx.

BARBATUM SERIES

SUBSERIES MACULIFERUM

KEY TO THE SPECIES

A. Young shoots and petioles clad with long bristles, often gland-tipped:

B. Flowers red in typical forms, tubular-campanulate.
Under leaf-surface clad with scattered strigose hairs.
Midrib densely covered with matted setae and branched hairs . . . . . **strigillosum.**

BB. Flowers white suffused rose, funnel-campanulate.
Under leaf-surface glabrous.
Midrib sparsely clad with glandular setae **monosematum.**

AA. Young shoots and petioles clad with shaggy branched eglandular hairs, often matted together, or with small floccose hairs and glands:

B. Calyx 7-15 mm., perulae persistent . **longesquamatum.**

BB. Calyx 1-2 mm., perulae deciduous:

C. Pedicels, ovary and style-base glandular:

D. Leaves shortly ovate, flowers rose **pseudochrysanthum.**

DD. Leaves narrowly lanceolate, flowers white . **Morii.**

CC. Pedicels and ovary glabrous, style glabrous **nankotaisanense.**

CCC. Pedicels and ovary tomentose, style glabrous:

D. Leaf apex acuminate . . . . **pachytrichum**

DD. Leaf apex obtuse to semi-rounded . **maculiferum**

Note.—Species not in key: **R. anwheiense,** imperfectly known but probably near *R. pseudochrysanthum.*

RHODODENDRON ANWHEIENSE, *Wilson* in *Journ. Arn. Arbor.*, vol. 6 (1925), 163.

Illustration—

Habit: a shrub with numerous stout branches, sparsely floccose-tomentose when young; leaves crowded at ends of shoots.

Leaves: lamina leathery, ovate-lanceolate, 3-6 cm. long, 1·5-3 cm. broad; apex acute, mucronulate; base rounded or abruptly narrowed; upper surface bright green, reticulate, glabrous, midrib impressed; under surface pale, glabrous; petiole 5-10 mm. long, grooved above, sparingly grey-floccose-tomentose.

Inflorescence: umbellate, 6-10-flowered.

Pedicels: erect.

Calyx: saucer-shaped, with minute triangular gland-ciliate teeth.

Capsule: cylindric, 1·2-1·7 cm. long, curving, furrowed, calyx and style persisting.

Habitat: Eastern China, Anwhei Province. In rocky places at 5000-6000 ft. altitude.

Flowers of this species are not known, and its position is therefore doubtful.

RHODODENDRON LONGESQUAMATUM, *Schneider* in *Ill. Handb. Laubholzk.*, vol. 2 (1909), 483.

(R. Brettii, *Hemsl. & Wils.*)

Illustration—

Habit : a shrub of 3-10 ft., sometimes much larger ; branches thick, those below inflorescences as much as 1 cm. in diameter ; leaves crowded ; the long brown or blackish perulae persistent for several years giving a shaggy appearance to the shoots ; young shoots densely clad with coarse shaggy branched hairs, at first pale fawn, later turning rusty.

Leaves : lamina thick, oblong, oblong-obovate, oblong-oblanceolate, 6-12 cm. long, 2-4 cm. broad ; apex obtuse to acute ; base obtuse to subrounded or somewhat auricled ; margin at first ciliate, finally somewhat asperous ; upper surface dark green, lustrous, at first clad with scattered tawny hairs the withered bases of which give a roughened surface to the mature leaves, midrib grooved more or less lined with shrivelled vestiges of the juvenile tomentum, primary veins 12-14 on each side slightly impressed ; under surface pale green, smooth, somewhat glossy, punctulate with minute glands, midrib prominent clad with shaggy tawny hairs and shorter glands, primary veins not conspicuous ; petiole stout, 1-2 cm. long, densely clad with shaggy tawny hairs.

Inflorescence : a racemose umbel of about 12 flowers ; rhachis stout, short.

Pedicels : 2-3 cm. long, stout (3 mm. diameter), whitish, densely clad with long-stalked glands and fewer strigose hairs.

Calyx : about 1-1·4 cm. long, basal cup fleshy, about 3 mm. long, lobes 5, unequal, oblong-acute, lanceolate or rounded, 5-12 mm. long, white or pinkish, densely glandular on the back and fringed with glands and hairs.

Corolla : openly campanulate, 4 cm. long, pink to rose, blotched deep crimson at the base, glabrous outside, puberulous inside at base ; lobes 5, 1·5 cm. long, 2 cm. broad, rounded, emarginate.

Stamens : 10, unequal, 1·5-3 cm. long ; filaments white, hairy over the lower 1 cm. ; anthers purplish-brown.

Pistil : about 4 cm. long ; ovary 5 mm. long, ovoid, densely glandular with long-stalked glands ; style glandular at base ; stigma small.

Capsule :

Habitat : Western Szechuan ; Mupin, Tatsienlu. In woodlands at 10,000-12,000 ft. altitude.

A most distinct species in the subseries with persistent perulae and long calyces. The affinity is with *R. pachytrichum*, as indicated by its leaf-texture and localisation of indumentum on the midrib.

RHODODENDRON MACULIFERUM, *Franch.* in *Journ. de Bot.*, vol. 9 (1895), 393.

Illustration—

Habit : a shrub or small tree, 5-30 ft. high ; in cultivation usually under 10 ft. ; young shoots pale green, with traces of a thin whitish tomentum ; shoots below inflorescences about 4 mm. diameter.

Leaves : lamina oblong-oval, elliptic or obovate, 6-11 cm. long, 2·5-4·5 cm. broad (average 8×3) ; apex broadly obtuse to rounded ; base rounded or truncate or cordulate ; margin more or less ciliate ; upper surface light green, mat, at maturity glabrous (unfolding leaves loosely floccose above), midrib a shallow groove, primary veins 12-14 on each side slightly impressed ; under surface pale glaucous-green, glabrous except on the prominent midrib which is floccose with interlaced and somewhat matted hairs denser towards the leaf-base, becoming thinner towards the apex and rarely extending more than two-thirds of the midrib length, primary veins forming conspicuous green lines ; petiole 1·5-2·5 cm. long, rounded and corrugated below, thinly floccose with hairs like those on the midrib.

Inflorescence : a lax umbellate raceme of 7-10 flowers ; rhachis 1·5-2·5 cm. long, pubescent.

Pedicels : 1·5-2 cm. long, strigose-floccose with whitish straggling hairs.

Calyx : small, 2-3 mm. long, lobes 5, triangular, clad like the pedicels.

Corolla : openly campanulate, somewhat oblique, about 3·5 cm. long, white or white faintly flushed rose with a deep purple basal blotch breaking into lines and a few spots ; lobes 5, rounded, 1 cm. long, 1·5 cm. broad.

Stamens : 10, unequal, 1·7-2·8 cm. long ; filaments white, at the base pilose, glabrous above ; anthers black-purple.

Pistil : about 3·5 cm. long ; ovary pale green, conoid, about 5 mm. long, clothed with a whitish tomentum, 6-7-chambered ; style glabrous.

Capsule :

Habitat : Szechuan and Western Hupeh. On cliffs and in woodlands at 8000-10,000 ft. altitude.

Akin to *R. pachytrichum*, but the leaves are broader for their length and more or less rounded at the apex. The midrib hairs are soft and matted, not as in *R. pachytrichum*, loose and shaggy.

RHODODENDRON MONOSEMATUM, *Hutch.* in *Bot. Mag.*, vol. 142 (1916), t. 8675.

ILLUSTRATION—*Bot. Mag.*, vol. 142 (1916), t. 8675.

HABIT: in cultivation a compact shrub of about 5 ft. with straight branches; leaves arranged in false whorls; young shoots greenish or purple tinted, densely clad with tawny setose glands; shoots below inflorescences 6 mm. in diameter; foliage bud-scales persisting for some time at the base of the current year's growth.

LEAVES: lamina leathery, oblong, 7-12 cm. long, 2·5-4 cm. broad; apex abruptly acuminate, the tip cuspidate; base unequally rounded or subcordate; upper surface dark green, mat, minutely rugulose, glabrous at maturity except in midrib groove which retains vestiges of juvenile tomentum, primary veins 12-15 on each side very slightly impressed; under surface pale green, glossy, glabrous except on the prominent light-coloured midrib which is more or less clad with strigose glands, primary veins very slightly raised; petiole about 1·5 cm. long, often purplish above, green beneath, densely clad with tawny setose glands which spread to the midrib above and below.

INFLORESCENCE: a rounded umbel of 12 flowers; rhachis about 1 cm. long, tomentose.

PEDICELS: 1·5-2 cm. long, densely clad with stalked glands.

CALYX: short, 1-1·5 mm.; lobes 5, ovate-triangular, clothed on back and fringed with glands.

COROLLA: wide funnel-shaped, 5 cm. long, white suffused with rose-pink, marked within with purple basal blotch; lobes 5, spreading or recurved, broadly rounded, emarginate, 1-1·5 cm. long, 1-2 cm. broad.

STAMENS: 10, 1·7-2·5 cm. long; filaments white, pubescent towards base; anthers purple-black.

PISTIL: 2·5-3 cm. long; ovary conoid, 4 mm. long, densely clad with long-stalked ascending purple-tipped glands, 6-celled; style glabrous, yellowish; stigma small, greenish.

CAPSULE:

HABITAT: Szechuan; Mount Wu.

Akin to *R. strigillosum* in its gland-tipped bristles, but with a glabrous under surface to the leaf apart from the midrib, and with a white to rose campanulate corolla. *R. pachytrichum* is also very closely allied but differs in the shaggy, non-glandular hairs of the young shoots and petioles and in the tomentose non-glandular pedicel and ovary.

RHODODENDRON MORII, *Hayata* in *Journ. Coll. Sc. Tokyo*, vol. 30 (1911), 173.

(R. PACHYSANTHUM, *Hayata*.)

ILLUSTRATION—

HABIT : a shrub or tree of 15-25 ft. ; shoots below inflorescences about 7 mm. diameter, green, glabrescent, with vestiges of hair flocks and glands.

LEAVES : lamina oblong-lanceolate, 6·5-13 cm. long, 2-3·5 cm. broad ; apex abruptly acuminate with prominent mucro, reflexed ; margin slightly recurved ; base rounded to truncate ; upper surface dark green, somewhat glossy, at maturity glabrous, midrib deeply grooved (keeled), primary veins 14-16 on each side, slightly impressed ; under surface paler, somewhat glossy, at maturity almost glabrous except on the prominent midrib, which is more or less clad with floccose hairs and glands, primary veins very slightly raised ; petiole 2-3 cm. long, more or less clad with detersile hair flocks and stalked glands.

INFLORESCENCE : a loose racemose corymb of 12-15 flowers ; rhachis 2 cm. long, glandular.

PEDICELS : 3-4 cm. long, glandular with stalked glands, pale green.

CALYX : minute, 2-3 mm. long ; lobes 5, unequal, about 1·5 mm. long, triangular, gland-fringed.

COROLLA : widely campanulate, 3·5-4·5 cm. long, white or white suffused rose, crimson spotted, the spots merging to a faint blotch at base ; lobes 5, 2 cm. long, 2·5 cm. broad, rounded, emarginate.

STAMENS : 10-14, unequal, 1·5-3 cm. long ; filaments white, puberulous over lower 7 mm. ; anthers ochre coloured.

PISTIL : 3·5-4 cm. long ; ovary 7 mm. long, conoid, blunt, clad with stalked glands and fewer hairs ; style white glandular for about 6 mm. at base ; stigma lobulate, greenish.

CAPSULE : cylindric, bow-shaped, covered with short strigose hairs, 1·5-2·5 cm. long, 5 mm. broad, glabrescent or sparsely pubescent.

HABITAT : Formosa. In forests at 6000-10,000 ft. altitude.

This Formosan species has kinship with the Central Chinese plants of the series such as *R. pachytrichum*. *R. pachysanthum* is said to be the same, differing only in the quite glabrous style and in the more persistent floccose indumentum of the leaf under surface.

RHODODENDRON NANKOTAISANENSE, *Hayata* in *Icon. Pl. Formos.*, vol. 9 (1920), 66.

Illustration—

Habit : a small bush ; branches stout, thinly floccose-tomentose.

Leaves : lamina leathery, oblong-lanceolate to ovate, 5·5-9 cm. long, 2·5 cm. broad ; apex acute, apiculate ; base rounded ; upper surface dark green, midrib impressed, primary veins obscured ; under surface glabrous except on the prominent midrib and near to it, pale, primary veins slightly elevated ; petiole 1·5-2 cm. long, grooved above.

Inflorescence : an umbellate corymb.

Pedicels : slender, 1·5-2 cm. long, glabrous.

Calyx : saucer-shaped, glabrous, with 5 minute triangular acute or obtuse teeth.

Corolla : campanulate, 2·5-3 cm. long , lobes 5, unequal, rounded, emarginate, 1·2 cm. long, 1·5 cm. broad.

Stamens : 10, unequal, shorter than corolla, 1-3 cm. long ; filaments flattened and villose or glabrous at base.

Pistil : about 3 cm. long, slightly exceeding stamens ; ovary oblong-ovoid, 4-5 mm. long, furrowed, glabrous or slightly glandular ; style slender, glabrous ; stigma capitate, lobed.

Capsule :

Habitat : Formosa ; Nankotaisan. At 10,000 ft. altitude.

A close ally of *R. Morii*, and perhaps but a variety of that species. It is a more glabrous plant of smaller habit and with smaller flowers.

RHODODENDRON PACHYTRICHUM, *Franch.* in *Bull. Soc. Bot. France,* vol. 33 (1886), 231.

Illustration—

Habit : a shrub of 6-18 ft. ; the young shoots straight, about 5 mm. in diameter, thickly clad with brownish shaggy branched hairs which spread also to the leaf-stalks ; leaves clustered in false whorls at the ends of each year's growth.

Leaves : lamina narrowly oblong to oblanceolate or obovate, 6-13 cm. long, 2-4 cm. broad ; apex obtuse to acuminate, distinctly cuspidate ; margin reflexed, at first ciliate with short-branched hairs ; base cuneate to rounded or somewhat cordulate ; upper surface bright green, minutely rugulose, at maturity glabrous, midrib deeply grooved, paler, primary veins 16-19 on each side very slightly impressed ; under surface pale green, smooth, shining, glabrous except for the prominent midrib which is more or less clad with brownish shaggy hairs, primary veins very slightly raised ; petiole about 1·5 cm. long, hardly grooved, densely clad with brown shaggy hairs which extend a short distance along the groove of the midrib.

Inflorescence : a racemose umbel of 7-10 flowers ; rhachis 1-1·5 cm. long, pubescent.

Pedicels : about 1 cm. long, densely clad with strigose hairs.

Calyx : about 1·5 mm. long, with 5 acute triangular lobes, glabrous or sparsely clad with hairs.

Corolla : campanulate, base broad, somewhat ventricose, 3·5 cm. long, white to pale rose, with a deep purple basal blotch within which shows on the outside as a dull discolouration, sometimes the corolla has a purplish-magenta tint ; lobes 5, about 1 cm. long, 1·5 cm. broad.

Stamens : 10, unequal, 1·5-2·5 cm. long ; filaments puberulous at base.

Pistil : about 3 cm. long ; ovary conoid, 5 mm. long, densely tomentose ; style glabrous ; stigma small.

Capsule : slender, cylindric, 2-3 cm. long, 6-8 mm. broad, furrowed, glabrescent, 8-chambered.

Habitat : Western Szechuan ; Mupin, Tatsienlu. In woods at 7000-11,000 ft. altitude.

This is distinguished from its nearest ally *R. maculiferum* by the acuminate leaf apex, and from *R. strigillosum* and *R. monosematum* by the shaggy branched hairs of its indumentum, which are not gland-tipped. There are forms with green buds and others with the buds reddish-purple.

RHODODENDRON PSEUDOCHRYSANTHUM, *Hayata* in *Journ. Coll. Sc. Tokyo*, vol. 25, Art. 19 (1908), 154.

Illustration—*Ibid.*, t. 26.

Habit: a bush 1-9 ft. high; shoots below inflorescences about 5 mm. diameter thinly clad with grey floccose hairs mixed with long-stalked glands; foliage rather crowded.

Leaves: lamina ovate to elliptic, or oblong-lanceolate, thick, rigid, 4-7 cm. long, 2-3 cm. broad; apex acute, sharply pointed, cuspidate; margin somewhat recurved; base rounded; upper surface dark green, glossy, at first greyish-floccose and glandular with stalked glands, later glabrescent, midrib deeply grooved, primary veins 15 on each side slightly impressed; under surface at maturity glabrescent (at first floccose), pale green, somewhat glossy, midrib raised, more or less retaining the floccose hairs and glands of the young leaf, primary veins not raised; petiole 1-1·5 cm. long, grey floccose and glandular with long-stalked glands, slightly grooved above.

Inflorescence: a racemose umbel of about 9 or more flowers; rhachis 1-2 cm. long.

Pedicels: 2-2·5 cm. long, pale green, more or less glandular with short-stalked glands.

Calyx: minute, 1-2 mm. long; lobes 5, unequal, triangular, gland-fringed.

Corolla: campanulate, 3-4 cm. long, 4·5 cm. across, pink with deeper rose lines outside along the petal ridges, spotted crimson within on the posterior side; lobes 5, 1·5-2 cm. long, 2·5 cm. broad.

Stamens: 10, 1·5-2·5 cm. long; filaments white, puberulous at base; anthers straw-coloured.

Pistil: 3·5 cm. long; ovary conoid, 5 mm. long, densely glandular; style white, glandular a third of its length; stigma lobulate crimson.

Capsule: oblong, woody, 1 cm. long, furrowed, glandular, 5-chambered.

Habitat: Formosa. At 6000-13,000 ft. altitude.

This Formosan species, with its ally *R. Morii*, is somewhat of an outlier in the subseries. Its affinity is with the species of Central China, such as *R. pachytrichum*. The description here given is based upon plants in cultivation in this country which agree in the main with the original description by Hayata.

RHODODENDRON STRIGILLOSUM, *Franch.* in *Bull. Soc. Bot. France,* vol. 33 (1886), 232.

Illustration—*Bot. Mag.*, vol. 146 (1920), t. 8864.

Habit : a bush of 5-8 ft., but at times attaining as much as 20 ft. ; young shoots and petioles more or less thickly beset with long stiff bristles for the most part tipped with glands.

Leaves : lamina oblong-lanceolate or oblanceolate, 8-16 cm. long, 2·5-4·5 cm. broad ; apex acuminate, cuspidate ; base tapered, narrowly rounded or cordulate ; margin recurved, at first ciliate ; upper surface convex, bright green, at first clad with soft filiform hairs, finally glabrous, midrib deeply grooved, primary veins 17-20 on each side slightly impressed ; under surface somewhat glossy, clad all over with isolated crisped hairs, midrib very prominent, clad with a loose tawny tomentum ; petiole round, 1-1·5 cm. long, clad with long bristles, many of them gland-tipped, mixed with shorter floccose-branched hairs.

Inflorescence : a racemose umbel of 8-12 flowers ; rhachis very short, about 7 mm. long, glandular.

Pedicels : about 1 cm. long, densely clad with long reddish setose glands.

Calyx : very small, a thickened, angular rim with 5 small setose-glandular teeth.

Corolla : tubular-campanulate, fleshy, deep red without spotting, in some forms paler, 4-6 cm. long, tube 3-4·5 cm. long, with 5 basal nectar pouches marked black crimson within ; lobes 5, oval to rounded, somewhat spreading, emarginate, 1·5-2·5 cm. long, 2-3 cm. broad.

Stamens : 10, unequal, 2·5-4 cm. long ; filaments slender, glabrous.

Pistil : 4-5 cm. long ; ovary ovoid, about 5 mm. long, densely clad with long reddish ascending setose glands ; style glabrous, reddish ; stigma small.

Capsule : oblong, about 2 cm. long, densely setose.

Habitat : Szechuan ; Mupin, Mount Omei and Wa-shan. In thickets and woodlands at 7000-10,000 ft. altitude.

An outstanding species in the subseries with the foliage clad with crisped hairs, a character recalling *R. glischrum,* but the aspect of the plant is more that of *R. pachytrichum.* Forms in cultivation have rich red flowers, but it is said to vary in colour from crimson to white.

BOOTHII SERIES

General Characters :—Small shrubs up to 4 ft. high, rarely epiphytic. Leaves evergreen, rarely rather large, densely scaly below, the scales from about their own diameter apart to nearly contiguous, often glaucous. Flowers few in a terminal cluster or rarely solitary, bright yellow or very rarely magenta-rose, with purplish tube (*R. tephropeplum*). Calyx-lobes usually large and leafy. Corolla more or less campanulate or broadly tubular, short, 5-lobed, usually scaly outside. Stamens 10, hairy sometimes nearly to the top. Ovary 5-6-celled, densely scaly ; style short and often curved, glabrous or scaly in the lower part. Capsule short and thick, usually enclosed by the persistent calyx-lobes.

Distribution :—Bhutan (5000 ft.), South-East Thibet (12,000-14,000 ft.), Yunnan (9,000-13,000 ft.), Upper Burma (10,000 ft.).

A fairly homogeneous group except for *R. Boothii* and *R. monanthum*, which diverge most from the general characters. *R. Boothii* is an epiphyte on oaks at a low elevation (5000 ft.) in Bhutan. *R. cerinum* has also the same habit in Upper Burma, whilst *R. megeratum* is occasionally epiphytic on old fir-trees at high elevations in Yunnan. The affinity of the series is mainly with *Glaucum*, but there is also some connection with *Maddenii* series, especially through *R. chrysolepis*.

J. H.

BOOTHII SERIES

KEY TO THE SPECIES

A. Flowers 3 or more in a terminal cluster:

B. Leaves distinctly acuminate or gradually narrowed to an acute apex:

C. Branchlets covered with yellowish woolly hairs; leaves ovate or ovate-elliptic, large, 4-5 in. long, 1½-2½ in. broad, hairy on the margins and midrib; style short, curved:

D. Inflorescence 7-8-flowered; flower-stalks scaly only **Boothii.**

D. Inflorescence 3-4-flowered; flower-stalks villous **mishmiense.**

C. Branchlets not hairy; leaves lanceolate, 2-3½ in. long, ½-1¼ in. broad, not hairy; style slender, straight:

D. Anthers exserted; calyx-lobes ¼ in. long; corolla-tube equally scaly outside . . . . **aureum.**

D. Anthers included; calyx-lobes very short; corolla-tube with lines of scales below the lobes . **chrysolepis.**

B. Leaves more or less rounded to the mucronate apex:

C. Leaves about ½ as broad as long, broadly obovate or elliptic:

D. Branchlets and leaf-stalks not bristly; corolla-tube scaly outside:

E. Leaves broadly obovate, narrowed to the base; stamens hairy in the lower half . . . **theiochroum.**

E. Leaves elliptic; stamens hairy in the lower half **sulfureum.**

D. Branchlets and leaf-stalks bristly with hairs; corolla-tube not scaly outside; stamens hairy nearly to the top . . . . . **commodum.**

C. Leaves ⅓-¼ as broad as long, more or less oblanceolate; scales on the lower surface less than their own diameter apart:

D. Corolla scaly outside; stamens densely hairy nearly to the apex . . . . . **cerinum.**

D. Corolla not scaly outside; stamens minutely pubescent in the lower half:

E. Flowers 3-4 together . . . **tephropeplum,**

E. Flowers 7-8 together . . . . **deleiense.**

A. Flowers solitary (or rarely 2-3):

B. Branchlets densely pilose with long hairs; leaf-stalks bristly; calyx large, about ⅓ in. long, not scaly outside:

C. Flower-stalks densely pilose . . . **megeratum.**

C. Flower-stalks not pilose . . . . **leucaspis.**

B. Branchlets at most slightly bristly; leaf-stalks not bristly; calyx very small, scaly outside . . **monanthum.**

RHODODENDRON AURITUM, *Tagg.*

Habit : a shrub of about 10 ft. ; shoots straggling, those below inflorescences about 3 mm. diameter ; densely lepidote, bark quickly peeling, exposing on older shoots a bare, smooth, coppery stem.

Leaves : lamina elliptic to elongate-elliptic or lanceolate, subcoriaceous, 2·5-5 cm. long, 1-2 cm. broad ; apex obtuse with a conspicuous mucro ; base broadly cuneate or subrounded ; upper surface bright green, lepidote ; under surface densely lepidote with golden to rusty-brown scales which vary much in size, some larger and darker than the majority, all about their own diameter apart or sometimes touching, epidermis papillate, midrib prominent, lateral veins obscure ; petiole 5-8 mm. long, densely lepidote.

Inflorescence : a terminal umbel of 4-7 flowers ; rhachis short, sparsely lepidote.

Pedicels : about 1·3 cm. long, densely lepidote, epilose.

Calyx : pale green, about 5 mm. long, basal cup densely lepidote ; lobes 5, ovate, each about 4 mm. long, distinctly reflexed, sparsely scaly on the back, margin ciliate but more or less lepidote.

Corolla : tubular-campanulate, about 2·5 cm. long, creamy-white with a slight tinge of pink on the lobes ; tube 1·3-1·5 cm. long, outside sparsely lepidote, within glabrous ; lobes 5, about 8 mm. long, 7 mm. broad.

Stamens : 10, unequal, 1-2 cm. long ; filaments white, hairy at the base ; anthers about or less than 1 mm. long, pale yellow.

Pistil : 2-2·5 cm. long ; ovary 4 mm. long, dome-shaped, greenish but with a dense covering of whitish glistening scales ; style white or tinged purple, thin, straight or slightly curved, lepidote for about one-third to one-half of its length ; stigma pink.

Capsule : ovoid, 8-10 mm. long, about 5 mm. broad, dehiscing from the apex by 5 valves, supported below by the persistent reflexed lobes of the calyx, rusty-brown with a thick incrustation of withered scales.

Habitat : South-Eastern Tibet, Tsangpo Gorge near Pemakochung.

Ward's original gatherings (*Ward* 6278) of this species are in fruit only. The description of the truss and flower are based

upon cultivated specimens received in 1930 from Sir John Ramsden, Bulstrode Gardens, Gerrard's Cross, Bucks, under Ward number 6278, and also upon specimens which flowered in the same year at the Royal Botanic Gardens, Edinburgh, under the same number. These in leaf shape and type of scale of the leaf underside agree with Ward's fruiting specimens, and there is no doubt that these flowering plants in cultivation under the Ward number 6278 are the same as the plant gathered in the wild in fruit. All the characters suggest affinity with *R. aureum*, but *R. auritum* differs in its smaller flower, in its flower colour, and in the much smaller calyx with smaller reflexed lobes. The style and stamens are short compared with those of *R. aureum*, and the filaments are less hairy. In its peeling bark, referred to by Captain Ward in his field note, *R. auritum* agrees with *R. aureum*. It differs slightly in the scales of the leaf under-surface. In *R. aureum* the scales are smaller and more deeply pitted in the papillate epidermis. The fruit also in *R. auritum* is broader for its length than the fruit of *R. aureum*.

There is a link also with *R. virgatum*, but the inflorescences of *R. auritum* are terminal. None of Ward's gatherings have lateral inflorescences, and the corolla in the cultivated specimens is not hairy outside as in *R. virgatum*. *R. aureum* is a Tali plant. The present species comes from far north-west of the Tali, viz. the Tsangpo Gorge, and thus is geographically remote from *R. aureum*. The species is linked also with *R. tephropeplum*, but apart from the difference in the flower colour it has a smaller reflexed calyx and the indumental scales of the leaf underside are different. H. F. T.

RHODODENDRON AUREUM, *Franch.*

Illustration—

Habit : shrub 2-4 ft. high ; branchlets slightly scaly.

Leaves : lanceolate, with *subcrenulate margins*, acute at each end, mucronate, 2-3 in. long, ½-1 in. broad, soon smooth above, densely *impressed-scaly below*, the scales very small and about their own diameter apart ; leaf-stalks ⅓ in. long.

Inflorescence : terminal, 3-5-flowered ; flower-stalks ¼ in. long, scaly.

Flowers : *bright yellow.*

Calyx : *large and leafy*, nearly ¼ in. long, lobes rounded, *scaly on both sides.*

Corolla : 5-lobed, broadly tubular, about 1 in. long, *rather densely scaly outside.*

Stamens : 10, long-exserted, pubescent in lower part.

Ovary : 5-celled, densely scaly ; *style scaly towards base*, slender, straight.

Capsule :

Habitat : Yunnan, 9000-10,000 ft. ; moist shady ledges of cliffs.

RHODODENDRON BOOTHII, *Nutt.*

A. Calyx and pistil. B. Stamen. C. Pistil. D. Capsule. (Habit figure after *Bot. Mag.*)

RHODODENDRON BOOTHII, *Nutt.*

Illustration—Hook. f. *Bot. Mag.*, t. 7149 (1890).

Habit : epiphytic ; leafy branchlets yellow-tomentose.

Leaves : ovate or ovate-elliptic, rounded at the base, *acutely acuminate at the apex*, 4-5 in. long, 1½-2½ in. broad, *hairy on the margin and midrib*, rather densely scaly below, scales small and about their own diameter apart ; leaf-stalks ⅓ in. long, woolly and scaly.

Inflorescence : terminal, umbellate, 7-10-flowered ; flower-stalks ¾ in. long, covered with small fleshy scales.

Flowers : bright lemon-yellow, not spotted.

Calyx : large, deeply 5-lobed, ⅓ in. long, lobes broadly rounded, glabrous except a few scales on the back and sometimes a few hairs on the margin.

Corolla : broadly bell-shaped, with 5 spreading rounded lobes ; tube and lobes *rather densely scaly outside.*

Stamens : 10, pilose for ⅓ to ½ their length ; anthers nearly ¼ in. long, chocolate-brown.

Ovary : 5-6-celled, densely rusty-scaly ; style curved, short, stout, *scaly towards the base*, with a broad disk-like stigma.

Capsule : ½ in. long, scaly, calyx persistent and slightly enlarged.

Habitat : Bhutan, Gascherong Hills, about 5000 ft. ; epiphytic on oaks.

RHODODENDRON CERINUM, *Balf. f. & Forrest.*

Illustration—

Habit : small epiphyte ; older branchlets with deciduous brownish bark, young ones densely scaly.

Leaves : elliptic-oblanceolate, obtusely mucronate, $1\frac{1}{2}$-$2\frac{1}{2}$ in. long, $\frac{2}{3}$-1 in. broad, soon glabrous above, *very densely scaly below* ; scales unequal and nearly contiguous ; leaf-stalks $\frac{1}{6}$ in. long.

Inflorescence : terminal, umbellate, about 5-flowered ; flower-stalks $\frac{1}{2}$ in. long, densely scaly.

Flowers : probably yellow.

Calyx : large, deeply 5-lobed, lobes rounded, $\frac{1}{5}$ in. long, scaly outside.

Corolla : broadly tubular, $\frac{3}{4}$ in. long, scaly outside, 5-lobed.

Stamens : 10, *densely villous nearly to the apex.*

Ovary : 5-celled, densely scaly ; style short, sharply curved, glabrous.

Capsule :

Habitat : Upper Burma, Kaw-ji Pass, 10,500 ft. ; in a mass on old *Abies.*

RHODODENDRON CHRYSOLEPIS, *Hutch. & Ward, n. sp.*

Illustration—

Habit: small epiphytic bush with long branches; bark deep-red-brown, hanging in shreds; branchlets glabrous or nearly so.

Leaves: oblong-lanceolate, *subacute at both ends*, $2\frac{1}{2}$-$4\frac{1}{2}$ in. long, $\frac{3}{4}$-$1\frac{1}{4}$ in. broad, glabrous and slightly reticulate above, glaucous-purple and *densely papillous* below, the scales *golden-yellow* and about three or more times their own diameter apart; leaf-stalks about $\frac{1}{2}$ in. long.

Inflorescence: terminal, about 5-flowered; flower-stalks $\frac{1}{2}$ in. long, *covered with golden-yellow scales.*

Flowers: bright canary-yellow, not scented.

Calyx: short and undulately lobed, scaly outside but glabrous on the margin.

Corolla: $1\frac{1}{4}$ in. long, 5-lobed; tube and lobes with *bands of scales outside*, the tube *pubescent* towards the base.

Stamens: 10, very unequal, pubescent near the base only.

Ovary: 5-celled, very densely covered with golden-yellow scales; style longer than corolla, scaly in the lower $\frac{2}{3}$ of its length; stigma large.

Capsule: $\frac{1}{2}$ in. long, densely covered with brown scales.

Habitat: Upper Burma, valley of the Seinghku; 7000-8000 ft. [*Ward* 6808 (type); 7455].

RHODODENDRON COMMODUM, *Balf. f. & Forrest.*

Illustration—

Habit: shrub 2-3 ft. high; branchlets slightly bristly with *appressed hairs.*

Leaves: few, obovate-elliptic, obtusely mucronate, 1-1½ in. long, ½-¾ in. broad, with a few small black scales above, densely scaly below, the scales very small and about ½ their own diameter apart; *leaf-stalks bristly.*

Inflorescence: terminal, about 5-flowered; flower-stalks stout, ⅓ in. long, scaly.

Flowers: yellow, small.

Calyx: well-developed, 5-lobed to base, ⅙ in. long, loosely glandular-scaly outside.

Corolla: broadly campanulate, 5-lobed, ⅔ in. long; tube glabrous outside, *lobes scaly.*

Stamens: 10, *very densely hairy nearly their full length.*

Ovary: 5-celled, densely glandular-scaly; style recurved, stout, glabrous.

Capsule: ⅓ in. long, scaly, with calyx-lobes persistent.

Habitat: Yunnan, eastern flank of N'Maikha—Salween Divide, 11,000-12,000 ft.

RHODODENDRON DELEIENSE, *Hutch. & Ward, n. sp.*

Illustration—

Habit : shrub ; branchlets covered with small black scales.

Leaves : scattered, oblong, rounded and mucronate at the apex, 2¼-5 in. long, 1-1½ in. broad, densely scaly below with small uniform black scales, the scales about their own diameter apart ; leaf-stalks ½ in. long.

Inflorescence : terminal, very shortly racemose, about 7-8-flowered ; flower-stalks 1 in. long, glandular-scaly.

Flowers : darker than in *R. tephropeplum* (*Ward*).

Calyx : large, deeply lobed, lobes ovate-elliptic, rounded at the apex, slightly glandular-scaly outside.

Corolla : tubular-campanulate, 1¼ in. long, not scaly outside.

Stamens : 10, slightly exserted, pubescent in the lower third.

Ovary : 5-celled, scaly ; style a little longer than the stamens, scaly in the lower half or two-thirds ; stigma crimson.

Capsule : about ⅓ in. long, enclosed by the large persistent calyx-lobes.

Habitat : Assam ; Delei Valley, 8000-11,000 ft., exposed places on rocky ridge, *Ward* 8202 (type) ; *Ward* 8165.

RHODODENDRON LEUCASPIS, *Tagg.*

ILLUSTRATION—*Gard. Chron.* 85 : 135, fig. 67 (1929).

HABIT : bushy undershrub, 1-2 ft. high ; branchlets pilose and scaly ; bud-scales soon falling off.

LEAVES : elliptic to obovate, rounded to a mucronate apex, subacute at the base, $1\frac{1}{4}$-2 in. long, $\frac{2}{3}$-1 in. broad, pilose on the upper surface and margin, scaly below, the scales slightly more than their own diameter apart ; leaf-stalks flat, ciliate, $\frac{1}{4}$ in. long.

INFLORESCENCE : 1-3-flowered, usually 2-flowered ; flower-stalks $\frac{1}{4}$ in. long, slightly scaly ; flower-bud-scales more or less persistent.

FLOWERS : pure white, 2 in. in diameter.

CALYX : large, $\frac{1}{3}$ in. long, lobes rounded, ciliate, hardly scaly outside.

COROLLA : rotate, about $1\frac{1}{4}$ in. long, sparingly scaly outside.

STAMENS : 10, subequal, pubescent in the lower half or three-quarters.

OVARY : densely scaly ; style short, curved from the base, slightly scaly at the base.

CAPSULE : not seen.

HABITAT : Tibet ; below Gyala, Tsangpo Gorge, 10,000 ft., on steep grassy slopes.

RHODODENDRON MEGERATUM, *Balf. f. & Forrest.*

(R. TAPEINUM, *Balf. f. & Farrer.*)

ILLUSTRATION—

HABIT: dwarf shrublet 1-2 ft. high; *branches densely pilose*, with purple deciduous bark and persistent bud-scales.

LEAVES: obovate-elliptic, mucronate, $\frac{3}{4}$-1 in. long, $\frac{1}{2}$-$\frac{2}{3}$ in. broad, very glaucous below, often shining above, densely scaly below, the scales subequal, gland-like, about their own diameter apart or less; *leaf-stalks very bristly.*

FLOWER: *solitary*, terminal, bright-yellow; stalks $\frac{1}{3}$ in. long, very *bristly with long hairs*, and with a few scales.

CALYX: large, almost membranous, 5-lobed only to about the middle, up to $\frac{1}{3}$ in. long, lobes rounded, glabrous or sometimes with a few long hairs on the margin.

COROLLA: $1\frac{1}{4}$ in. long, 5-lobed, very slightly scaly outside.

STAMENS: 10, villous in lower part.

OVARY: 5-celled, scaly; style short, glabrous.

CAPSULE: very short, about $\frac{1}{3}$ in. long, enclosed by the large persistent calyx-lobes.

HABITAT: Yunnan, 12,000-13,000 ft.; on boulders and ledges of cliffs. North-East Upper Burma; forming prostrate cushions on alpine granitic precipices or sometimes epiphytic on old fir-trees.

RHODODENDRON MISHMIENSE, *Hutch. & Ward, n. sp.*

ILLUSTRATION—

HABIT : epiphytic shrub ; branchlets shortly hirsute ; leaf-bud-scales soon falling off.

LEAVES : elliptic to oblong-elliptic, acuminate, $3\frac{1}{2}$-$4\frac{1}{2}$ in. long, $1\frac{1}{3}$-$1\frac{3}{4}$ in. broad, thick and leathery, hairy on the midrib above and on the margins, densely scaly below, the scales impressed, scarcely their own diameter apart ; lateral nerves several, distinct ; leaf-stalks hirsute, $\frac{1}{3}$ in. long.

INFLORESCENCE : terminal, *3-4-flowered* ; flower-stalks 1 in. long, *villous* and with a few scales ; flower-bud-scales early deciduous, shortly white-ciliate.

FLOWERS : bright lemon-yellow, upper lobe of corolla heavily spotted with reddish brown.

CALYX : large, deeply 5-lobed, $\frac{1}{2}$ in. long, lobes rounded, fringed with golden yellow or silver white wavy hairs, scaly outside.

COROLLA : broadly bell-shaped, with 5 spreading rounded lobes, scaly and softly pubescent outside, about $1\frac{1}{4}$ in. long.

STAMENS : 10, pilose in the lower half to two-thirds ; anthers $\frac{1}{3}$ in. long, reddish brown.

OVARY : 5-celled, deeply channelled, densely scaly ; style very short and curved, *glabrous*.

CAPSULE : $\frac{1}{2}$ in. long, scaly, surrounded by the reflexed persistent venose calyx.

HABITAT : Assam ; Mishmi Hills ; Delei Valley, 7000-8000 ft., *Ward* 8113 ; *Ward* 8046 (type) ; 9000 ft., *Ward* 8592.

RHODODENDRON MONANTHUM, *Balf. f. & W. W. Sm.*

Illustration—

Habit: small spreading shrub 2-3 ft. high, with very short branchlets and few leaves; young parts slightly bristly and glandular.

Leaves: *elliptic to obovate*, mucronate, 1-1½ in. long, ⅓-¾ in. broad, loosely scaly above, densely so below and glaucous, the scales very unequal and *less than their own diameter apart*; leaf-stalks ⅛ in. long, scaly.

Flower: *solitary*, terminal, *bright-yellow*; stalk curved, ¼ in. long, densely scaly.

Calyx: very small, scaly outside.

Corolla: widely funnel-shaped, 5-lobed, very laxly scaly outside, ¾ in. long.

Stamens: 10, scarcely as long as corolla, densely pubescent in lower part.

Ovary: 5-celled, densely scaly; style glabrous.

Capsule: ½ in. long, densely glandular-scaly.

Habitat: North-West Yunnan, Lu-po Pass, Mekong—Salween Divide; shady situations upon margins of pine forests, 10,000-11,000 ft. South-East Tibet; 12,000-13,000 ft., rocky slopes amongst scrub and on cliffs.

RHODODENDRON SULFUREUM, *Franch.*

Illustration—Stapf. in *Bot. Mag.*, t. 8946 (1923).

Habit: loosely-branched shrub 2-4 ft. high; older bark brown and deciduous, smooth; young branchlets finely scaly.

Leaves: *broadly elliptic*, rounded to a blunt mucro at the apex, 1-2 in. long, $\frac{3}{4}$-1 in. broad, glabrous above, pale below and densely scaly, the scales very small equal-sized and about their own diameter apart; leaf-stalks $\frac{1}{4}$ in. long.

Inflorescence: terminal, about 4-5-flowered; flower-stalks $\frac{1}{2}$ in. long, densely scaly.

Flowers: bright yellow.

Calyx: large, deeply 5-lobed, lobes $\frac{1}{6}$ in. long, scaly outside *and fringed with a few hairs.*

Corolla: $\frac{3}{4}$ in. long, broadly tubular, 5-lobed, *scaly outside.*

Stamens: 10, densely bearded from well above the base to the middle.

Ovary: 5-celled, densely scaly; style short and stout, curved.

Capsule: $\frac{1}{3}$ in. long, thick, *reticulate* and scaly.

Habitat: Yunnan, near Tali, 9000-10,000 ft.; moist shady ledges of cliffs.

RHODODENDRON TEPHROPEPLUM, *Balf. f. & Farrer.*

(R. SPODOPEPLUM, *Balf. f. & Farrer.*)

ILLUSTRATION—

HABIT: shrub 2-4 ft.; branches stiff, covered with small dark scales when young.

LEAVES: oblong-obovate, rounded to a short blunt mucro at the apex, $1\frac{1}{4}$-$2\frac{1}{4}$ in. long, $\frac{1}{2}$-1 in. broad, slightly scaly above, densely scaly below, the scales *small black and equal*, less than their own diameter apart, *glaucous between the scales*; leaf-stalks $\frac{1}{4}$ in. long, slightly scaly.

INFLORESCENCE: terminal, 3-4-flowered; flower-stalks densely loosely scaly, $\frac{1}{2}$ in. long.

FLOWERS: vivid magenta-rose with crimson-purple tube, not scented.

CALYX: *large, leafy*, nearly $\frac{1}{4}$ in. long, lobes obovate-rounded, *veiny*, slightly scaly outside towards the base.

COROLLA: 5-lobed, $1\frac{1}{4}$ in. long, *not scaly outside.*

STAMENS: 10, shortly exserted, minutely pubescent in lower part.

OVARY: 5-celled, densely scaly; *style scaly in lower half.*

CAPSULE: *very short*, $\frac{1}{4}$ in. long, scaly, *enclosed by the longer persistent striate calyx-lobes.*

HABITAT: South-Eastern Tibet, Tsarong, 14,000 ft.; ledges of limestone cliffs and rocky slopes on the Salween—Kiu chiang Divide. Also in Upper Burma.

RHODODENDRON THEIOCHROUM, *Balf. f. & Smith.*

ILLUSTRATION—

HABIT: shrub 2-4 ft. high; branchlets short and twiggy, laxly covered with small impressed scales.

LEAVES: *broadly obovate*, broadly and obtusely mucronate at the apex, broadly wedge-shaped at the base, 1-2½ in. long, ¾-1½ in. broad, closely scaly below, the scales *rather sunken* and about their own diameter apart; leaf-stalks ¼ in. long, clothed with sunken scales.

INFLORESCENCE: terminal, few-flowered, umbellate; flower-stalks ⅓ in. long, *densely scaly*.

FLOWERS: bright sulphur-yellow.

CALYX: large, deeply 5-lobed, lobes rounded, ⅙ in. long, *rather densely scaly outside* but not hairy.

COROLLA: broadly campanulate, ¾ in. long, *scaly outside the tube* and the middle of the lobes.

STAMENS: 10, densely bearded between the middle and the base; anthers ⅙ in. long.

OVARY: 5-celled, very densely scaly; style much curved, short and stout, sparingly scaly towards the base.

CAPSULE: ⅓ in. long, scaly.

HABITAT: Yunnan, 10,000-11,000 ft.; open situations amongst dwarf scrub.

CAMELLIAEFLORUM SERIES

General Characters : — Shrubs, sometimes epiphytic. Leaves evergreen, lepidote below. Inflorescence terminal, few-flowered. Calyx well-developed. Corolla shortly and broadly tubular, 5-lobed, with a spreading limb, scaly outside, villous inside the throat. Stamens 12-16, pubescent. Ovary 10-celled ; style glabrous.

Distribution :—Eastern Himalaya.

A small series showing connection with the *Maddenii* group.

J. H.

KEY TO THE SPECIES

A. Leaves not acuminate ; scales on the lower surface contiguous or slightly overlapping . . . . **camelliaeflorum.**

A. Leaves acutely acuminate ; scales on the lower surface about their own diameter apart . . . . . **lucidum.**

RHODODENDRON CAMELLIAEFLORUM, *Hook. f.* Flowers white tinged with pink.

A. Flower. B. Calyx and style. C. Pistil. D. Cross-section of ovary. (Orig.)

RHODODENDRON CAMELLIAEFLORUM, *Hook. f.*

(R. SPARSIFLORUM, *Nutt.*; R. COOPERI, *Balf. f.*)

ILLUSTRATION—Hook f. *Rhod. Sikkim Himal.*, t. 28; *Bot. Mag.*, t. 4932.

HABIT: shrub 2-6 ft. high, often epiphytic; branchlets densely scaly.

LEAVES: narrowly oblong-lanceolate, *obtusely mucronate*, obtuse at the base, 2-3½ in. long, ¾-1¼ in. broad, soon glabrous and reticulate above, very densely scaly below, the scales *contiguous or slightly overlapping*, with membranous margins; leaf-stalks ⅓ in. long, densely scaly.

INFLORESCENCE: terminal, usually 2-flowered; flower-stalks ⅙ in. long, densely scaly.

FLOWERS: white, tinged with pink.

CALYX: deeply 5-lobed, ¼ in. long, lobes broadly oblong-elliptic, not ciliate, with a few scales outside near the base.

COROLLA: fleshy, shortly and very broadly tubular with a wide-spreading limb; tube ¼-⅓ in. long, villous inside the throat, scaly outside.

STAMENS: 12-16, shortly exserted, pubescent towards the base.

OVARY: 10-celled, densely scaly; style stout, glabrous.

CAPSULE: ½ in. long, densely scaly.

HABITAT: Sikkim Himalaya, 9000-11,000 ft.; Bhutan, 9000-10,000 ft.

RHODODENDRON LUCIDUM, *Nutt.*

Illustration—

Habit : shrub, branchlets sparingly lepidote.

Leaves : ovate-elliptic, somewhat narrowed to the base, acutely acuminate, 2-4 in. long, 1-1½ in. broad, finely reticulate above, glaucous and densely scaly below, the scales unequal-sized and *about their own diameter apart* ; lateral nerves distinct, about 8 pairs ; leaf-stalks ¼-½ in. long, scaly.

Inflorescence : terminal, flowers not seen ; winter-buds ellipsoid, ¾ in. long, the scales ovate-orbicular, mucronate, about ¼ in. long, loosely scaly on the back, minutely ciliate.

Habitat : Bhutan ; mountains beyond the Bhorelli, amongst pines and other plants of the higher regions.

Note.—This has remained an imperfectly known species since first collected by Booth.

CAMPANULATUM SERIES

The series Campanulatum is a somewhat heterogeneous assemblage of a few purely Himalayan species. Three distinct types are contained in it. The first centres round *R. campanulatum*, the second is represented by *R. fulgens*, the third by *R. lanatum*. These all agree in the general shape, texture and rounded apex of the leaf, and in their typical condition also in the character of the indumentum. Taking *R. campanulatum* as the centre, we may regard *R. fulgens* as deviating in its dense many-flowered truss, reminiscent of that of *R. arboreum* or *R. barbatum*, while *R. lanatum* with a similar truss has yellow flowers and a densely tomentose ovary. This latter character is in strong contrast to the other members of the series, which have a glabrous ovary. The truss of the series does not show the elongation so characteristic of the members of the Ponticum series, nor does the ovary (except in *R. lanatum*) deviate from the glabrous state. The leaves in the series Campanulatum tend to be rounded at both ends. This character along with the glabrous ovary keeps the series apart from members of the Arboreum series. It should be noted also that it is an entirely eglandular series.

KEY TO THE SPECIES

A. Shoots and petioles woolly. Flowers yellow, ovary tomentose . . . . . **lanatum.**
AA. Shoots and petioles (at maturity) glabrous. Flowers lilac-rose or deep red, ovary glabrous :
B. Truss compact. Corolla tubular-campanulate. Flowers deep blood-red, unspotted . . . . **fulgens.**
BB. Truss lax. Corolla openly campanulate. Flowers lilac or rosy-purple, more or less spotted :
C. Indumentum numerous separate hair tufts . **Wallichii.**
CC. Indumentum a continuous covering :
D. Young foliage with metallic lustre. Unfolding leaves quite glabrous above . . . **aeruginosum.**
DD. No metallic lustre on leaves. Unfolding leaves loosely tomentose above . . . . **campanulatum.**

H. F. T.

RHODODENDRON AERUGINOSUM, *Hook. f.* in *Rhodo. Sikkim Himal.* (1851), 23.

Illustration—Hook. f. in *Rhodo. Sikkim Himal.* (1851), t. 22.

Habit: a compact rounded shrub of 6-8 ft.; young shoots light green, glaucous and glabrous, older wood chestnut-brown, branches below inflorescences about 7 mm. diameter.

Leaves: lamina elliptic or oval, 5-11 cm. long, 3-5·5 cm. broad: apex obtuse to acute, cuspidate mucronulate; margin sharply recurved; base obtuse or semi-cordulate; upper surface specially of young foliage glaucous with a verdigris bloom, older leaves somewhat glossy, midrib grooved, primary veins 12-14 on each side deeply impressed; under surface clad with a thick bistrate tomentum the upper layer rusty and woolly, under layer thin whitish, midrib prominent, primary veins obscured; petiole 1-1·5 cm. long, glaucous, glabrous.

Inflorescence: a racemose corymb of 10-12 flowers; rhachis 2-3 cm. long, glabrous.

Pedicels: 2·5-3·5 cm. long, glabrous.

Calyx: minute, about 1 mm. long, with 5 minute glabrous teeth.

Corolla: campanulate, about 4 cm. long, lilac-rose to reddish-purple, spotted deeper within at the back on the upper lobes and blotched at the base; lobes 5, rounded, slightly emarginate, 1·5 cm. long, 2 cm. broad.

Stamens: 10, unequal, 1·5-2·5 cm. long; filaments glabrous or puberulous at base.

Pistil: about 3·5 cm. long; ovary conoid, 7 mm. long, glabrous, reddened, 5-8-chambered; style glabrous, reddish; stigma lobulate, purple.

Capsule: elongate cylindric, grooved, slightly curved at base, 2·5 cm. long, 5 mm. broad.

Habitat: Sikkim Himalaya. At about 13,000 ft. altitude.

This is regarded by some as a variety of *R. campanulatum*. It is more compact in habit, stiffer in foliage, and much less floriferous.

RHODODENDRON CAMPANULATUM, *D. Don* in *Trans. Wern. Soc.*, vol. 3 (1821), 410.

(R. Batemanii, *Hook. f.*)

Illustrations—*Bot. Mag.*, vol. 66 (1840), t. 3759; Sweet, *Brit. Fl. Gard.*, t. 241.

Habit: a shrub 12-18 ft., with spreading branches; young shoots at first green, glabrous, those below inflorescences about 7 mm. diameter.

Leaves: lamina broadly elliptic or oval, leathery, 7-15 cm. long, 3-6 cm. broad; apex obtuse; base obtuse, rounded or semi-cordate; upper surface smooth, dark green, glossy, glabrous at maturity, midrib slightly grooved, primary veins 14-16 on each side, impressed; under-surface clad with a fawn, rusty-brown or tawny felted indumentum, midrib prominent, primary veins somewhat obscure; petiole at first tomentose, later glabrous, 1·5-2 cm. long.

Inflorescence: a racemose corymb of about 8 flowers; rhachis 2-2·5 cm. long, glabrous or slightly pubescent.

Pedicels: 2-2·5 cm. long, glabrous.

Calyx: small, 1-2 mm. long, with 5 minute triangular lobes, glabrous.

Corolla: broadly campanulate, about 4 cm. long, white, rosy-white and various shades of rosy-purple, more or less purple spotted within on the upper side; lobes 5, rounded, 1·5 cm. long, 2 cm. broad, notched.

Stamens: 10, unequal, 1·5-2·5 cm. long; filaments puberulous at base.

Pistil: 3·5 cm. long; ovary about 5 mm. long, conoid, glabrous, 6-7-chambered; style glabrous.

Capsule:

Habitat: the Himalayas from Kashmir to Bhutan.

This is a common and very variable species long known in cultivation. The variations concern chiefly colour of flower, size of leaf, and thickness and colour of indumentum.

R. Batemanii, Hook. f., is sometimes placed under *R. Wallichii* as in the Flora of British India. Hooker regarded it as near *R. campanulatum*. Its indumental characters support this view. It is not akin to *R. arboreum*, of which it has been taken to be a form. It is presumed to have come from seed obtained from Bhutan by Booth. Its ovary tends to be more or less hairy, and not glabrous, as in *R. campanulatum* and its allies. Both its origin and its position are consequently somewhat doubtful.

RHODODENDRON FULGENS, *Hook f.* in *Rhodo. Sikkim Himal.* (1851), 27.

Illustrations—Hook. f. in *Rhodo. Sikkim Himal.* (1851), t. 25; *Bot. Mag.*, vol. 88 (1862), t. 5317.

Habit: a rounded shrub of 4-8 ft., fully branched; young branches bright green, later brown, glabrous; those below inflorescences about 7 mm. diameter.

Leaves: lamina oblong-oval or broadly obovate, 6-11 cm. long, 5-7 cm. broad; apex rounded; base rounded or slightly cordate; upper surface deep green, glossy, midrib grooved, primary veins 12-14 on each side, slightly impressed; under surface paler, clad with a more or less dense tawny woolly tomentum, midrib prominent, almost bare, primary veins obscure or completely hidden; petiole 1·5-2·5 cm. long, bright green, glabrous, glossy.

Inflorescence: a compact rounded truss of 10-12 flowers; rhachis short, about 2 cm. long, glabrous.

Pedicels: about 1 cm. long, glabrous, pink tinted.

Calyx: short, with 5 broadly rounded lobes, the latter about 2-3 mm. long, crimson tinted, glabrous.

Corolla: tubular-campanulate, fleshy, about 3 cm. long, 4·5 cm. across, deep blood-red without spots, with 5 black-red nectaries in the 5 basal pouches; lobes 5, rounded, 1·5 cm. long, 1·8 cm. broad, slightly notched.

Stamens: 10, subequal, clustered round style, turned up at tip, 1·3-1·8 cm. long; filaments white or pink tinted at base, glabrous; anthers chocolate brown.

Pistil: 2 cm. long; ovary conoid, truncate, 5 mm. long, glabrous, 8-chambered; style glabrous, shortly curved at apex, pinkish, not enlarged below the small black truncate stigma.

Capsule: oblong-cylindric, purplish-glaucous, slightly curved, oblique to calyx, 3 cm. long, 1 cm. broad at the base.

Habitat: Sikkim and Nepal. Mountain slopes and spurs. Growing together and often forming thickets at 12,000-14,000 ft. altitude.

This member of the series differs from *R. campanulatum* and its allies in the deep red colour of the corolla, its tubular shape, fleshy texture and lack of spots. Its truss is much more compact than that of its allies.

RHODODENDRON SHERRIFFII, *Cowan* in *Notes R.B.G. Edin.*, vol. 19 (1937), 231.

Illustration—

Habit : shrub 6-12 ft. ; young shoots short, clad with a mealy tomentum and short-stalked glands.

Leaves : lamina somewhat leathery, oblong to elliptic or oblong-oval, 4·5-6 cm. long, 2·5-4 cm. broad ; apex rounded or obtuse, distinctly mucronate ; base rounded ; upper surface green, glabrous, primary veins 7-10 on either side ; under surface brownish, densely clad with a soft indumentum of hairs which are easily removed, midrib slightly raised ; primary veins entirely concealed ; petiole about 1·5 cm. long, glabrous.

Inflorescence : a terminal umbel of 4-6 flowers.

Pedicels : 1-2 cm. long, glabrous.

Calyx : cup-shaped, small, glabrous, crimson ; lobes 5, unequal, about 5 mm. long and broad.

Corolla : funnel-campanulate, 4 cm. long, deep crimson ; lobes 5, about 4 cm. long, 1·5 cm. wide, emarginate, more or less crenulate.

Stamens : 10, unequal, scarcely as long as corolla tube ; filaments glabrous.

Pistil : 4·3 cm. long ; ovary conoid, 5 mm. long, furrowed, entirely glabrous ; style glabrous.

Capsule : straight, about 1·3 cm. long, 7 mm. broad, included in the persistent calyx.

Habitat : Southern Tibet, Chayul Chu Lung. On steep hillsides at 11,500-12,500 ft.

R. Sherriffii is placed tentatively in the Campanulatum Series, but is so distinct that it does not fit well into any recognised Series. The soft indumentum of closely packed flattened hairs mixed with stellately branched hairs is unlike that of any other known species, but except for the indumentum *R. Sherriffii* closely resembles species in the Thomsonii Series.

RHODODENDRON TSARIENSE, *Cowan* in *Notes R.B.G. Edin.*, vol. 19 (1937), 232.

Illustration—

Habit : a shrub of 3-10 ft. ; young branches densely yellowish tomentose ; those below inflorescence about 4 cm. in diameter.

Leaves : thickly leathery, lamina elliptic-oblong to elliptic-obovate, 2-6 cm. long, 1-3 cm. broad ; apex obtuse or rounded, abruptly and very shortly acuminate ; base rounded or subcordate ; upper surface green, faintly wrinkled, with vestiges of a tomentum in the groove of the midrib ; primary veins about 10 on each side ; under surface clad all over with a thick yellowish woolly tomentum ; petiole 5-8 mm. long, densely tomentose.

Inflorescence : a racemose umbel of 3-4 flowers ; rhachis 3-4 mm. long, densely puberulous.

Pedicels : about 1 cm. long, clad with a woolly tomentum.

Calyx : small, 1-2 mm. long, tomentose with 5 minute triangular lobes.

Corolla : campanule, 3-3·5 cm. long, pink or white sprinkled with spots on posterior side, the tube pubescent towards the base ; lobes 5, 1 cm. long, 1·6 cm. broad, rounded, emarginate.

Stamens : 10, unequal, 1·5-2 cm. long ; filaments hairy at base.

Pistil : about 3·2 cm. long ; ovary ovoid, 5 mm. long, densely tomentose, 5 chambered ; style glabrous, longer than stamens.

Capsule : cylindric, 2 cm. long, 5 mm. broad, faintly furrowed, densely rusty tomentose.

Habitat : Southern Tibet and Eastern Bhutan Tsari, Chayul Chu. In mixed Abies and Rhododendron forests on cliff ledges and among rocks at 10,500-14,500 ft.

A species akin to *Rh. lanatum* with small rounded leaves and white, pink-spotted or rose-coloured flowers.

RHODODENDRON LANATUM, *Hook. f.* in *Rhodo. Sikkim Himal.* (1851), 17.

Illustration—Hook. f. in *Rhodo. Sikkim Himal.* (1851), t. 16.

Habit: a large shrub or small tree in the wild state; in cultivation a bush generally; the leaves confined to the tops of the branches; branchlets densely clad with a soft adpressed white to tawny cottony tomentum, those below inflorescences about 5 mm. in diameter.

Leaves: lamina obovate or elliptic, 6-12 cm. long, 4-5 cm. broad; apex obtuse; base acute or sub-obtuse (not cordate); upper surface a bright yellowish-green, glabrous, except in the groove of the midrib, which is woolly like the petiole, primary veins 8-10 on each side; under surface clad all over, including the prominent midrib, with a dense white to tawny wool, primary veins obscured; petiole about 1·5 cm. long, densely woolly.

Inflorescence: a racemose corymb of 6-10 flowers; rhachis 1 cm. long.

Pedicels: 1·5-2 cm. long, clad with a whitish or fawn cottony tomentum.

Calyx: small, 2 mm. long, with 5 broad glabrous lobes.

Corolla: broadly campanulate, about 4·5 cm. long, pale sulphur-yellow, sprinkled inside at back with red spots; lobes 5, 1·5 cm. long, 2 cm. broad, rounded.

Stamens: 10, unequal, 1·5-2·5 cm. long; filaments hairy at base; anthers dark brown.

Pistil: about 4 cm. long; ovary oblong ovoid, slightly furrowed, densely tomentose, 5 mm. long, 5-chambered; style glabrous; stigma lobulate.

Capsule: 2·5 cm. long, 8 mm. broad, oblong-cylindric, slightly curved, more or less rusty tomentose.

Habitat: Sikkim Himalaya. On rocky spurs of mountains and gullies at 10,000-12,000 ft. altitude.

This species is conspicuous in the series by its yellow flowers and tomentose ovary. These characters, with the entire lack of glands, invite comparison with members of the Wasonii subseries of the series Taliense. The latter is, however, remote geographically and its members have a different kind of truss.

Rhododendron Wallichii, *Hook. f.* (Copied from *Bot. Mag.*, t. 4928.)

A. Flowering shoot (about ⅓ natural size). B. Indumentum hair of leaf under surface (much enlarged). C. Portion of leaf under surface. D. Pistil. E. Section of ovary. F. Stamen.

D, E and F enlarged.

RHODODENDRON WALLICHII, *Hook. f.* in *Rhodo. Sikkim Himal.* (1849), 4.

Illustrations—Hook. f. in *Rhodo. Sikkim Himal.* (1849), t. 5; *Bot. Mag.*, vol. 82 (1856), t. 4928.

Habit: a shrub of 8-10 ft., with rugged tortuous branches covered with dark brown bark; young shoots glabrous, those below inflorescences about 5 mm. diameter.

Leaves: lamina leathery, elliptic, 7-10 cm. long, 2·5-5 cm. broad; apex obtuse; base cordate; margin recurved; upper surface dark green, smooth, glabrous, midrib slightly grooved, pale, primary veins slightly impressed; under surface pale green, dotted with powdery ferruginous hair tufts which do not form a continuous indumentum and are more or less detersile, midrib prominent, primary veins 10-12 on each side slightly raised; petiole stout, 1-1·5 cm. long, glabrous, grooved above, rounded below, often tinged with red.

Inflorescence: a raceme of 6-10 flowers; rhachis about 2 cm. long, glabrous.

Pedicels: 1·5-2·5 cm. long, glabrous or slightly floccose-pubescent.

Calyx: minute, with 5 minute triangular lobes, glabrous or slightly floccose-pubescent.

Corolla: broadly campanulate, 4-5 cm. long, lilac colour, more or less dotted with deeper rose-coloured spots; lobes 5, 1·5 cm. long, 2 cm. broad, rounded, notched.

Stamens: 10, 2·5-3·5 cm. long; filaments white, puberulous at base; anthers purple-brown.

Pistil: 3·5-4 cm. long; ovary oblong-conoid, 7 mm. long, greenish, glabrous, 5-6-chambered; style greenish-white, glabrous, hardly swollen below the small lobulate stigma.

Capsule:

Habitat: interior of Sikkim Himalaya.

This has been regarded as a variety of *R. campanulatum*. In the latter the indumentum is usually a soft continuous pad, while in *R. Wallichii* it is sparse and of a stippled character.

CAMPYLOGYNUM SERIES

General Characters :—Small shrubs (up to 6 ft. high) or shrublets a few inches high, with short branchlets ; *winter-bud-scales often persistent.* Leaves evergreen, small and more or less obovate, thick, scaly below, the scales sometimes falling off, more or less glaucous. Flowers mostly solitary, terminal, small, nodding on rather long stalks. Calyx mostly *well-developed and leafy.* Corolla purple to blackish-purple, widely campanulate, short, 5-lobed, not scaly outside but often covered with ' bloom.' Stamens 10, slightly longer than the tube, the filaments hairy in the lower part. Ovary 5-celled, densely scaly ; *style glabrous, very short and thick,* somewhat recurved or inclined away from the stamens. Capsule short and ovoid-globose, 5-celled.

Distribution : — North-East Burma and Yunnan, 9000-15,000 ft.

A small and well-marked group most nearly related to the *Glaucum* series, but with mostly solitary purplish widely campanulate corollas ; some affinity also with the *Lepidotum* series. The short bent style seems a constant character.

J. H.

KEY TO THE SPECIES

A. Scales on the lower surface of the leaves very few and soon falling off :

B. Calyx well developed, equally 5-lobed, lobes leafy **campylogynum.**

B. Calyx very poorly developed, one lobe larger than the others **charopoeum.**

A. Scales on the lower surface of the leaves fairly numerous and persistent :

B. Leaves narrowly obovate-oblanceolate ; corolla about $\frac{1}{3}$ in. long . . . . . **myrtilloides.**

B. Leaves broadly elliptic-obovate ; corolla about $\frac{3}{4}$ in. long **cremastum.**

RHODODENDRON CAMPYLOGYNUM, *Franch.*

(R. CAERULEO-GLAUCUM, *Balf. f. & Forrest*; R. DAMASCENUM, *Balf. f. & Forrest*; R. GLAUCO-AUREUM, *Balf. f. & Forrest.*)

ILLUSTRATION—

HABIT: shrub up to 6 ft. high; *bud-scales more or less persistent*; young branchlets short, scaly.

LEAVES: obovate, obtusely mucronate, up to 1 in. long and $\frac{1}{2}$ in. broad, thick, at length glabrous above, at first slightly scaly below but *at length quite glabrous, margins markedly crenulate and recurved*; leaf-stalks 2 mm. long, not scaly.

INFLORESCENCE: terminal, 1-3-flowered; flower-stalks 1-1$\frac{1}{4}$ in. long, at first slightly scaly.

RHODODENDRON CAMPYLOGYNUM, *Franch.*
A. Leaf, showing lower surface. B. Stamen. C. Pistil.

FLOWERS: from pale rose-purple to almost black-purple, with a glaucous bloom outside.

CALYX: large and leafy, 5-lobed to the base, lobes broadly rounded-ovate, about 6 mm. long and broad, glabrous outside.

COROLLA: widely campanulate, rather variable in size, up to $\frac{3}{4}$ in. long, glabrous outside; lobes 5-6, rounded.

STAMENS: 10-12, about as long as the tube, pubescent near the base.

OVARY: beady-glandular-scaly; style short and very thick, glabrous, abruptly recurved.

CAPSULE: very short and subglobose, about $\frac{1}{4}$ in. long, scarcely scaly.

HABITAT: Western Yunnan, moist open situations of the Tali Range, 9000-12,000 ft.

RHODODENDRON CHAROPOEUM, *Balf. f. & Farrer.*

Illustration—

Habit : a low bush of 6-8 in. ; bud-scales persistent on the young shoots.

Leaves : few and crowded, obovate-oblanceolate, rounded to a thick mucro at the apex, $\frac{1}{2}$-$\frac{3}{4}$ in. long, $\frac{1}{4}$ in. broad, smooth above, *glaucous-papillous below, with sometimes a scale persistent here and there,* the midrib very prominent and straw-coloured.

Inflorescence : terminal, 1-flowered ; flower-stalks curved, about $1\frac{1}{4}$ in. long, *quite glabrous.*

Flowers : rose-purplish, nodding.

Calyx : *very small,* with one or two fairly developed lobes.

Corolla : broadly tubular-campanulate, $\frac{3}{4}$ in. long, 5-lobed, glabrous outside.

Stamens : 10, as long as the corolla-tube, pubescent in the lower half.

Ovary : 5-celled, covered with small scales ; *style as long as the corolla,* fairly stout, glabrous.

Habitat : North-East Burma, Chawchi Pass, 11,900-13,000 ft., in open places of Alpine slopes.

RHODODENDRON CREMASTUM, *Balf. f. & Forrest.*

Illustration—

Habit: small shrub; branchlets laxly scaly, with rather large persistent bud-scales.

Leaves: broadly obovate-elliptic, rounded to a broad mucro at the apex, abruptly narrowed at the base, $\frac{2}{3}$-$\frac{3}{4}$ in. long, $\frac{1}{3}$-$\frac{1}{2}$ in. broad, glabrous above, loosely scaly below and with *distinct lateral nerves.*

Inflorescence: terminal, racemose, 2-3-flowered; flower-stalks fairly stout, $1\frac{1}{4}$ in. long, loosely covered with small scales.

Flowers: purplish-rose.

Calyx: well-developed, $\frac{1}{4}$ in. long, basal portion *densely scaly outside*, lobes 5, rounded, *glabrous outside*, purplish.

Corolla: widely and shortly campanulate, 5-lobed, $\frac{3}{4}$ in. long, quite glabrous outside, *softly villous inside the tube.*

Stamens: 10, nearly as long as the corolla, villous in the lower $\frac{2}{5}$.

Ovary: 5-celled, densely beady-glandular; style short, thickish, $\frac{1}{3}$ in. long, glabrous.

Habitat: Western North-West Yunnan, Mekong—Salween Divide.

RHODODENDRON MYRTILLOIDES, *Balf. f. & Ward.*

ILLUSTRATION—

HABIT : dwarf shrublet 3-4 in. high ; branchlets *muricate-glandular*, with a few *persistent bud-scales.*

LEAVES : obovate-oblanceolate, rounded to a thick mucro, $\frac{1}{2}$-$\frac{3}{4}$ in. long, $\frac{1}{3}$ in. broad, *glaucous below* and with a fair number of scattered persistent scales.

INFLORESCENCE : terminal, 1-flowered ; flower-stalks very slender, $1\frac{1}{4}$ in. long, covered with scattered scales.

FLOWERS : plum-coloured outside, maroon inside.

CALYX : medium-sized, deeply 5-lobed, lobes rounded, $\frac{1}{12}$ in. long, *glabrous outside.*

COROLLA : shortly campanulate, $\frac{2}{5}$ in. long, 5-lobed, quite glabrous outside.

STAMENS : 10, pubescent in the lower part, included.

OVARY : 5-celled, scaly ; style short and thick.

HABITAT : North-East Burma, ridge of Naung-Chaung, in Nmai Divide, in masses on the granite cliffs generally amongst moss, open damp situations, 15,000 ft.

CAMTSCHATICUM SERIES

This is a small series with three species. Its distribution is confined to a corner of North-Eastern Asia, Japan and Alaska.

The series is so distinct that it has been regarded by some authorities as a distinct genus to which has been given the name *Therorhodion*. The question is discussed in *Kew Bull.* (1921), p. 201. It is pointed out there that *Therorhodion* differs from Rhododendron proper in the flowers being borne on the young leafy shoots and not in special buds, as in the case of all true Rhododendrons, and in the unilaterally split corolla-tube. There is but one species in cultivation, viz. *camtschaticum*, and this is usually labelled in gardens as a rhododendron. It has been successfully crossed with such rhododendrons as *R. glaucum*.

Material of the other two species is not available for critical comparison and the descriptions and key are based on the written records.

KEY TO THE SPECIES

A. Corolla pubescent outside . . . **camtschaticum.**
AA. Corolla glabrous outside :
B. Corolla-lobes exceeding tube . . . **glandulosum.**
BB. Corolla-lobes equalling or less than tube **Redowskianum.**

H. F. T.

RHODODENDRON CAMTSCHATICUM, *Pall.* (Copied from t. 8210 in *Bot. Mag.*)

A. Flowering shoots (about ⅔ natural size). B and C. Stamens. D. Pistil. E. Fruit. F. Young fruit showing persistent calyx.

RHODODENDRON CAMTSCHATICUM, *Pallas* in *Fl. Ross.*, vol. 1 (1784), 48.

(THERORHODION CAMTSCHATICUM, *Small*; RHODOTHAMNUS KAMTSCHATICUS, *Lindl.*)

ILLUSTRATIONS—*Fl. Ross.*, vol. 1 (1784), t. 33; *Bot. Mag.*, vol. 134 (1908), t. 8210; *Lindl.* in Paxt. *Fl. Gard.*, vol. 1 (1850), t. 22.

HABIT: a low growing, more or less deciduous undershrub, usually about 6 in. high; branches more or less procumbent; young shoots clad with long soft gland-tipped hairs.

LEAVES: sessile; lamina chartaceous, obovate or spathulate-obovate, 2-5 cm. long, 1-2·5 cm. broad; apex rounded to obtuse with a tuberculate tip; base cuneate; venation prominent, especially below, the primary veins ascending at a narrow angle, vein reticulations open, the primary veins, midrib and margin clad with setose hairs, many of which are at first gland-tipped.

INFLORESCENCE: flowers solitary or in pairs at the ends of branchlets.

PEDICELS: setose-glandular and bearing leafy bracts.

CALYX: split almost to the base into 5 foliaceous green oblong lobes, 1-1·8 cm. long, 4-5 mm. broad, strongly nerved, glandular-setose outside and on the margin.

COROLLA: rotate, about 2·5 cm. long, rose-purple, tube on the lower side split to the base or nearly so, one-third as long as the lobes, pubescent outside; lobes 5, oblong-elliptic, rounded, pubescent outside, spotted within.

STAMENS: 10, unequal, 1-2 cm. long, the longest as long as the corolla; filaments purple-red, densely pubescent towards the base; anthers broad, almost black.

PISTIL: nearly as long as corolla; ovary broadly ovoid, pubescent, 5-chambered; style curved, purple-red, hairy towards the base.

CAPSULE: narrowly oblong-ovoid, scarcely 1 cm. long, 5-lobed, shortly pubescent.

HABITAT: Alaska; both sides of the Behring Straits; the shores of the sea of Okhotsk to Northern Japan.

This dwarf species is deciduous, or almost so, in cultivation. Its aspect in flower recalls that of certain lepidote rhododendrons such as *R. calostrotum*, but it is widely different in its foliage, which is elepidote, and in its peculiar corolla.

RHODODENDRON GLANDULOSUM (*Standley ex Small*) in *N. Amer. Flora*, vol. 29 (1914), 45.

(THERORHODION GLANDULOSUM, *Standley, ibid.*)

ILLUSTRATION—

HABIT : a low shrub forming dense clumps a few inches high, copiously branched.

LEAVES : lamina spathulate, oval or ovate, 1-2 cm. long ; obtuse, often rounded and abruptly pointed, or sometimes acute at the apex, crenulate, glandular-ciliate, veiny, somewhat shining, sessile, or nearly so.

CALYX : lobes oblong, often narrowly so, to elliptic-oblong, 8-10 mm. long, glandular-pubescent and glandular-ciliate.

COROLLA : rose-purple, 2 cm. long or slightly shorter, glabrous, the lobes somewhat erose, eciliolate.

CAPSULES : oval, 7-9 mm. long, pubescent with short white hairs.

HABITAT : Alaska ; foot of Kigluaik Mountains, near Oogluk Bay, Imuruk Basin.

This is a little known Alaskan species which is very closely akin to *R. Redowskianum.*

RHODODENDRON REDOWSKIANUM, *Maxim.* in *Prim. Fl. Amur.* (1859), 189.

(Therorhodion Redowskianum, *Hutch.* in *Kew Bull.* (1921), 204.)

Illustrations—*Maxim. Prim. Fl. Amur.* (1870), 48, t. 2, figs. 21-25; *Kew Bull.* (1921), 204, fig. 1.

Habit: a low shrublet about 10 cm. high, branched from the base; branchlets rough with persistent leaf-bases; young shoots thinly setose with gland-tipped hairs; leaves deciduous.

Leaves: lamina chartaceous, spathulate-oblanceolate, 5-15 mm. long, 3-6 mm. broad; apex subtriangular; base attenuate-cuneate, subdecurrent; margin ciliate with gland-tipped hairs; venation of lower surface conspicuous.

Inflorescence: flowers solitary, or up to three at the end of the young shoots.

Pedicels: finely pubescent and with a few scattered gland-tipped hairs, and bearing also a few leafy bracts.

Calyx: split to the base into 5 lobes; lobes linear-oblong, obtuse, about 5 mm. long, 1-2 mm. broad, finely puberulous outside, ciliate with gland-tipped hairs.

Corolla: almost rotate, about 1·5 cm. long, split to the base on the lower side, glabrous, tube 7-8 mm. long; lobes 5, broadly oblong, crenulate, 6 mm. long, 5 mm. broad.

Stamens: 10, a little longer than the corolla-tube; filaments pubescent in the lower third; anthers broad for their length.

Pistil: hardly 1 cm. long; ovary densely pubescent; style 5 mm. long, abruptly curved, pubescent in the lower half; stigma discoid.

Capsule:

Habitat: Manchuria.

This is very near to *R. camtschaticum*, but according to the description it differs in the smaller leaves and in the non-pubescent corolla, which has lobes about as long or a little shorter than the tube.

CAROLINIANUM SERIES

General Characters :—Small shrubs ; branchlets scaly. Leaves evergreen, densely scaly below. Inflorescence terminal, umbellate-racemose, several-flowered. Flowers rose-coloured or rarely nearly white. Calyx short, slightly ciliate. Corolla funnel-shaped, scaly outside. Stamens 10, exserted, pubescent. Ovary scaly ; style glabrous. Capsule short.

Distribution :—South-Eastern United States.

A small American section bearing some resemblance to the *Heliolepis* series of Asia.

J. H.

KEY TO THE SPECIES

A. Corolla densely scaly outside ; leaves acutely and rather abruptly acuminate ; corolla-lobes crisped . **minus**

A. Corolla glabrous or sparingly scaly outside ; leaves obtuse at the apex or very shortly subacute :

B. Corolla-lobes not crisped (fide Small), the tube less than $\frac{2}{3}$ in. long . . . . . **carolinianum.**

B. Corolla-lobes crisped (fide Small), the tube over $\frac{2}{3}$ in. long **Chapmannii.**

RHODODENDRON CAROLINIANUM, *Rehder.*

ILLUSTRATION—Ker in *Bot. Reg.*, 1, t. 37 (as *R. punctatum* β).

HABIT : shrub ; branchlets covered with scattered glands.

LEAVES : obovate-elliptic to elliptic, broadly cuneate at the base, rounded or slightly pointed at the apex, 2-3¼ in. long, 1-1½ in. broad, soon glabrous above and markedly reticulate, densely scaly below, the scales nearly contiguous ; leaf-stalks ½ in. long, scaly.

INFLORESCENCE : terminal, umbellate-racemose, 4-9-flowered ; flower-stalks about ½ in. long, scaly.

FLOWERS : pale rosy-purple or rarely whitish, usually without spots.

CALYX : as in *R. minus.*

COROLLA : narrowly tubular, 1 in. long, *glabrous* or slightly scaly outside.

STAMENS : 10, nearly as long as the corolla, hairy at the base.

OVARY : scaly ; style glabrous.

CAPSULE : narrowly oblong, about ⅓ in. long, scaly.

HABITAT : Eastern United States ; mountains of North Carolina.

RHODODENDRON CHAPMANNII, *Gray*.

Illustration—

Habit : erect rigid shrub up to 6 ft. high.

Leaves : oblong to elliptic, obtuse at the apex, $\frac{3}{4}$-2 in. long, scaly beneath ; leaf-stalks up to $\frac{1}{4}$ in. long.

Inflorescence : dense-flowered ; flower-stalks $\frac{2}{3}$ in. long.

Flowers : rose-coloured.

Calyx : as in *R. minus*.

Corolla : broadly funnel-shaped, up to 2 in. long, with *crisped lobes*.

Stamens : 10, pubescent in the lower part.

Ovary : scaly ; style glabrous.

Capsule : $\frac{1}{3}$ in. long, scaly.

Habitat : West Florida, in sandy pine lands.

RHODODENDRON MINUS, *Michaux*. Flowers rose.
A. Lower surface of leaf. B. Stamen. C. Calyx and pistil.

RHODODENDRON MINUS, *Michaux.*

(R. PUNCTATUM, *Andrews* ; R. CUTHBERTII, *Small.*)

ILLUSTRATION—Andrews in *Bot. Rep.* 1, t. 36 (as *R. punctatum*).

HABIT : shrub up to a few feet high ; branchlets laxly covered with small scales ; leaf-bud-scales early deciduous.

LEAVES : ovate-elliptic or elliptic, *acutely triangular* at each end, $1\frac{1}{2}$-$3\frac{1}{2}$ in. long, $\frac{3}{4}$-$1\frac{1}{2}$ in. broad, slightly scaly above, densely glandular scaly below, about half their own diameter apart to nearly contiguous, the lateral nerves obscure ; leaf-stalks about $\frac{1}{3}$ in. long.

INFLORESCENCE : terminal, several-flowered, the bud-scales densely scaly outside and closely ciliate on the margin ; flower-stalks about $\frac{1}{2}$ in. long, densely glandular-scaly.

FLOWERS : rose-coloured.

CALYX : unequally 5-lobed, about $\frac{1}{8}$ in. long, some of the lobes with a few weak hairs on the margin.

COROLLA : narrowly funnel-shaped, 5-lobed, about $1\frac{1}{4}$ in. long, *densely scaly* on the outer surface.

STAMENS : 10, a little longer than the corolla-tube, densely villous in the lower part.

OVARY : densely scaly ; style glabrous.

CAPSULE : $\frac{1}{3}$ in. long, densely scaly.

HABITAT : South-Eastern United States.

CEPHALANTHUM SERIES

(Including **Fragrans** Series)

General Characters :—Small shrubs ; branchlets scaly and sometimes bristly. Leaves evergreen, small, usually narrow, densely scaly below. Inflorescence terminal, more or less capitate, the flowers subsessile and often forming a globose cluster. Flowers usually white or yellow, rarely rose or purple. Calyx usually well developed, often fringed with hairs. Corolla narrowly tubular with a spreading limb, villous within the throat, rarely scaly outside. Stamens 5, included in the corolla-tube, glabrous or slightly pubescent. Ovary scaly ; style very short and thick, glabrous. Capsule very short.

Distribution :—North-Eastern Burma, through Yunnan and Szechuan to North-Eastern Asia.

A fairly large series of very closely allied species showing close connection with *Anthopogon*, of which they appear to be more advanced representatives, the variable number of stamens of that group giving place to the definite number 5, all hidden away in the corolla-tube. As the filaments are very short and usually glabrous the corolla is generally densely villous within.

J. H.

CEPHALANTHUM SERIES

KEY TO THE SPECIES

A. Corolla scaly outside:

B. Leaves narrowly oblanceolate, at most only $\frac{1}{6}$ in. broad **radinum.**

B. Leaves broadly elliptic, about $\frac{1}{4}$ in. broad **Sargentianum.**

A. Corolla glabrous or slightly pubescent outside:

B. Leaves broadly- or oblong-elliptic, 2-3 times as long as broad:

C. Calyx lobes densely fringed with hairs:

D. Leaves about 2 in. long . . . **platyphyllum.**

D. Leaves about 1 in. long or less:

E. Ovary scaly:

F. Leaf-bud-scales persistent:

G. Flowers white; stamens hairy towards the base **cephalanthum.**

G. Flowers pink; stamens glabrous . **crebreflorum.**

F. Leaf-bud-scales deciduous:

G. Stamens glabrous; calyx not scaly outside **cephalanthoides.**

G. Stamens puberulous; calyx scaly outside **clivicola.**

E. Ovary glabrous . . . . **primulaeflorum.**

C. Calyx lobes not or only slightly fringed with hairs; leaves about $\frac{3}{4}$ in. long:

D. Leaf-bud-scales deciduous:

E. Flower-stalks glabrous; flowers yellow:

F. Filaments glabrous; leaves rusty below **gymnomiscum.**

F. Filaments pubescent; leaves brown below **anthopogonoides.**

E. Flower-stalks scaly:

F. Young branchlets not bristly; scales on the lower surface of the leaf short and very close:

G. Stamens pubescent:

H. Flowers white; leaves $\frac{3}{4}$ in. long . . **acraium.**

H. Flowers rose; leaves $\frac{1}{3}$ in. long . **cremnophilum.**

H. Flowers purplish; leaves $\frac{2}{3}$ in. long . **Adamsii.**

G. Stamens glabrous:

H. Flowers yellow . . . . **praeclarum.**

H. Flowers rose . . . . **daphniflorum.**

F. Young branchlets bristly; scales loose and flaky **lepidanthum.**

D. Leaf-bud-scales persistent:

E. Flower-stalks nearly glabrous; corolla pink **chamaetortum.**

E. Flower-stalks scaly; corolla yellow . . **nmaiense.**

B. Leaves linear or oblong-lanceolate, about 3-5 times as long as broad:

C. Stamens glabrous:

D. Calyx lobes narrowly lanceolate; leaves $\frac{1}{2}$ in. long **trichostomum**

D. Calyx lobes rounded and very short; leaves up to $1\frac{1}{4}$ in. long . . . . . **ledoides.**

C. Stamens pubescent . . . . **sphaeranthum.**

RHODODENDRON ACRAIUM, *Balf. f. & W. W. Sm.*

Illustration—

Habit : shrub 3-5 ft. high ; branchlets scaly, the leaf-bud-scales early deciduous.

Leaves : aromatic, oblong-elliptic, mucronate, about $\frac{3}{4}$ in. long and $\frac{1}{4}$ in. broad, glabrous above, densely covered below with short flaky scales ; leaf-stalks $\frac{1}{8}$ in. long.

Inflorescence : terminal, shortly racemose, several-flowered, the bud-scales early deciduous ; flower-stalks $\frac{1}{6}$ in. long, *densely scaly*.

Flowers : white.

Calyx : large, $\frac{1}{6}$ in. long, *lobes scaly outside*, but not or only *slightly ciliate*.

Corolla : narrowly tubular, $\frac{1}{2}$ in. long, *not scaly outside*, villous in the throat.

Stamens : 5, included in the tube, minutely pubescent near the base.

Ovary : scaly ; style very short, turbinate, glabrous.

Capsule : $\frac{1}{6}$ in. long, scaly.

Habitat : Yunnan ; Chungtien Plateau, 12,000-13,000 ft., open cliffs and amongst boulders.

RHODODENDRON ADAMSII, *Rehder.*

(R. FRAGRANS, *Maxim.*)

ILLUSTRATION—

HABIT: small shrub; branchlets twiggy, scaly; leaf-bud-scales early deciduous.

LEAVES: elliptic, mucronate, about $\frac{2}{3}$ in. long, $\frac{1}{3}$ in. broad, closely covered with overlapping scales below; leaf-stalks $\frac{1}{8}$ in. long.

INFLORESCENCE: terminal, capitate, several-flowered, flower-bud-scales *subpersistent*; flower-stalks very short, scaly.

FLOWERS: purplish.

CALYX: well developed, $\frac{1}{8}$ in. long, *lobes scaly outside*, but *not ciliate.*

COROLLA: narrowly tubular, $\frac{1}{2}$ in. long, *not scaly outside*, villous within the throat.

STAMENS: 5, included, pubescent at the base.

OVARY: scaly; style very short, turbinate, glabrous.

CAPSULE: very short.

HABITAT: North-Eastern Asia.

RHODODENDRON ANTHOPOGONOIDES, *Maxim.*

ILLUSTRATION—

HABIT : small shrub ; branchlets densely scaly and slightly pubescent ; leaf-bud-scales early deciduous.

LEAVES : *broadly elliptic*, broadly rounded or subcordate at the base, obtusely mucronate, about 1 in. long and $\frac{3}{4}$ in. broad, impressed-reticulate and glabrous above, closely covered with brown overlapping scales below ; leaf-stalks $\frac{1}{6}$ in. long.

INFLORESCENCE : terminal, capitate, several-flowered ; flower-bud-scales persistent during flowering : flower-stalks *glabrous*.

FLOWERS :

CALYX : large, $\frac{1}{6}$ in. long, lobes broadly oblong, *glabrous outside*, slightly ciliate.

COROLLA : narrowly tubular, $\frac{1}{2}$ in. long, *not scaly outside*, densely villous inside.

STAMENS : 5, included, pubescent.

OVARY : scaly ; style very short, turbinate, glabrous.

CAPSULE :

HABITAT : Kansu, Tangut Region.

RHODODENDRON CEPHALANTHOIDES, *Balf. f. & W. W. Sm.*

Illustration—

Habit : dwarf shrub up to 4 ft. high ; branchlets short and twiggy, shortly bristly and scaly ; leaf-bud-scales early deciduous.

Leaves : oblong-elliptic, mucronate, $\frac{3}{4}$ in. long, $\frac{1}{3}$ in. broad, soon glabrous and shining above, densely covered with flaky scales below ; leaf-stalks $\frac{1}{8}$ in. long.

Inflorescence : terminal, capitate, few-flowered ; flower-bud-scales early deciduous ; flower-stalks $\frac{1}{8}$ in. long, nearly glabrous.

Flowers : white, with yellow tube.

Calyx : well-developed, $\frac{1}{6}$ in. long, lobes scaly, fringed with hairs.

Corolla : narrowly tubular, $\frac{1}{2}$-$\frac{2}{3}$ in. long, *not scaly outside*, villous within.

Stamens : 5, included, glabrous.

Ovary : scaly ; style very short, turbinate, glabrous.

Capsule : $\frac{1}{6}$ in. long, scaly.

Habitat : Yunnan, 11,000-14,000 ft., dry ledges and clefts of limestone cliffs.

RHODODENDRON CEPHALANTHUM, *Franch.*

ILLUSTRATION—

HABIT : low shrub ; branchlets densely tomentose and bristly when young, clothed by the persistent leaf-bud-scales.

LEAVES : oblong-elliptic, mucronate, nearly 1 in. long, about $\frac{1}{3}$ in. broad, thick and leathery with recurved margins, glabrous above and impressed-reticulate, densely covered with several layers of flaky scales below ; leaf-stalks $\frac{1}{8}$ in. long.

INFLORESCENCE : densely capitate, terminal, several-flowered ; flower-bud-scales persistent during flowering ; flower-stalks very short.

FLOWERS : white.

CALYX : large, deeply 5-lobed, $\frac{1}{6}$ in. long, *lobes scaly outside* and densely fringed with long hairs.

COROLLA : narrowly tubular, $\frac{2}{3}$ in. long, 5-lobed, *not scaly outside*, villous within the throat.

STAMENS : 5, included in the tube, slightly hairy towards the base.

OVARY : scaly ; style very short, turbinate, glabrous.

CAPSULE : $\frac{1}{6}$ in. long, scaly, the short style persistent.

HABITAT : Yunnan and Szechuan, 9000-10,000 ft.

RHODODENDRON CHAMAETORTUM, *Balf. f. & Ward.*

ILLUSTRATION—

HABIT : small twiggy matted shrub, 6-12 in. high ; branchlets scaly, clothed by the persistent leaf-bud-scales.

LEAVES : broadly elliptic, mucronate, about $\frac{1}{2}$ in. long and $\frac{1}{3}$ in. broad, closely reticulate and glabrous above, densely covered with rusty flaky scales below, margins recurved ; leaf-stalks $\frac{1}{8}$ in. long.

INFLORESCENCE : densely capitate, few-flowered ; flower-bud-scales subpersistent ; flower-stalks $\frac{1}{8}$ in. long, nearly glabrous.

FLOWERS : rose.

CALYX : well developed, $\frac{1}{6}$ in. long, *lobes scaly outside* and slightly fringed with hairs.

COROLLA : narrowly tubular, $\frac{1}{2}$ in. long, *not scaly outside*, villous within.

STAMENS : 5, included, glabrous.

OVARY : scaly ; style very short, turbinate, glabrous.

CAPSULE : $\frac{1}{6}$ in. long, scaly.

HABITAT : Yunnan, Mekong—Salween Divide, 14,000 ft., open stony meadows.

RHODODENDRON CLIVICOLA, *Balf. f. & W. W. Sm.*

ILLUSTRATION—

HABIT : shrub 3-5 ft. high ; branchlets scaly ; leaf-bud-scales early deciduous.

LEAVES : aromatic, oblong or elliptic-oblong, about 1 in. long and $\frac{1}{3}$ in. broad, reticulate above, densely scaly below, the scales contiguous, mostly uniform with larger darker ones between ; leaf-stalks scaly.

INFLORESCENCE : terminal, several-flowered ; flower-bud-scales early deciduous ; flower-stalks $\frac{1}{6}$ in. long, scaly.

FLOWERS : white with yellow tube.

CALYX : $\frac{1}{6}$ in. long, *lobes scaly outside*, fringed with long twisted hairs.

COROLLA : $\frac{3}{4}$ in. long, villous within.

STAMENS : 5, included, pubescent towards the base.

OVARY : scaly ; style very short, turbinate, glabrous.

CAPSULE :

HABITAT : Yunnan, mountains in the north-east of the Yangtze bend, 11,000-12,000 ft.

RHODODENDRON CREBREFLORUM, *Hutch. & Ward, n. sp.*

Illustration—

Habit: prostrate shrublet a few inches high; branchlets covered with the persistent leaf-bud-scales.

Leaves: broadly elliptic, rounded to the mucronate apex, $\frac{1}{2}$-$\frac{3}{4}$ in. long, $\frac{1}{4}$-$\frac{1}{2}$ in. broad, impressed-reticulate above, very densely scaly below with brown overlapping flaky scales; leaf-stalks flat above.

Inflorescence: terminal, with several (up to 12) flowers crowded in a cluster; flower-bud-scales persistent during flowering, densely ciliate; flower-stalks very short.

Flowers: pale pink.

Calyx: large, divided to the base into broadly oblong ciliate lobes $\frac{1}{8}$ in. long, very slightly scaly on the back.

Corolla: tubular, with a spreading limb, $\frac{3}{4}$ in. long, glabrous outside, villous within the throat.

Stamens: 6, included in the tube, glabrous.

Ovary: scaly; style very short, obconic, glabrous.

Capsule: not seen.

Habitat: Assam; Delei Valley, 13,000 ft., on rocky ledges, *Ward* 8337 (type).

RHODODENDRON CREMNOPHILUM, *Balf. f. & W. W. Sm.*

Illustration—

Habit : small intricately branched shrub a few inches high ; branchlets very short, slightly scaly ; leaf-bud-scales early deciduous.

Leaves : broadly elliptic, mucronate, $\frac{1}{3}$ in. long, $\frac{1}{5}$ in. broad, impressed-reticulate above, densely covered with short overlapping scales below ; leaf-stalks $\frac{1}{10}$ in. long.

Inflorescence : terminal, capitate, about 10-flowered ; flower-bud-scales subpersistent during flowering ; flower-stalks short, scaly.

Flowers : white tinged with yellow.

Calyx : $\frac{1}{7}$ in. long, lobes broadly elliptic, *scaly outside* and slightly ciliate.

Corolla : $\frac{1}{2}$ in. long, narrowly tubular, *not scaly outside*, villous inside.

Stamens : 5, included, slightly pubescent.

Ovary : scaly ; style very short, turbinate, glabrous.

Capsule :

Habitat : Yunnan, Chungtien Plateau, 13,000 ft.

RHODODENDRON DAPHNIFLORUM, *Diels.*

ILLUSTRATION—

HABIT : small low shrublet ; branchlets densely scaly ; leaf-bud-scales deciduous.

LEAVES : narrowly ovate-oblong, 1 in. long, $\frac{1}{2}$ in. broad, dark green above, glabrous and shining, densely covered with spongy cinnamon-brown scales below ; leaf-stalks $\frac{1}{12}$ in. long, scaly.

INFLORESCENCE : terminal, 6-8-flowered ; flower-stalks $\frac{1}{12}$ in. long, scaly.

FLOWERS : rose.

CALYX : purplish, *scaly on the margin*, glabrous outside.

COROLLA : *not scaly outside*, $\frac{2}{3}$ in. long.

STAMENS : 5, included, glabrous.

OVARY : scaly ; style very short.

CAPSULE :

HABITAT : North Szechuan, Dongrego, about 13,000 ft., in snowy meadows.

RHODODENDRON KONGBOENSE, *K. Ward ex Rothschild, Suppl. Rhod. Assoc. Year Book* (1933), 53 ; *Hutch.* in *Bot. Mag* (1937), t. 9492.

Illustration—*Bot. Mag.*, t. 9492.

Habit : small shrublet ; branchlets short, densely lepidote, leafy, sometimes some of the leaves much reduced ; leaf-bud scales early deciduous.

Leaves : oblong or oblong-lanceolate, obtuse at both ends, 2-2·5 cm. long, 0·7 cm. broad ; aromatic, shining and lepidote with small black scales above, completely covered below with a felt of brown overlapping scales ; lateral nerves scarcely evident below ; petiole 5-6 mm. long, densely lepidote.

Inflorescence : a terminal " ball " of several shortly stalked flowers ; bud-scales subpersistent during flowering, very densely lepidote outside and fringed with hairs ; stalks lepidote.

Flowers : rose.

Calyx : large for the size of the flower, 5 mm. long, lobes oblong-elliptic, rounded at the top, densely lepidote only down the middle, shortly fringed with hairs.

Corolla : tube cylindric, pilose on both sides and densely pilose with soft white hairs at the mouth, 6 mm. long ; lobes rounded, glabrous.

Stamens : 5 ; filaments glabrous ; anthers reaching to and hidden amongst the hairs at the mouth of the corolla.

Ovary : deeply grooved and densely lepidote ; style scarcely as long as the ovary, obconic, glabrous.

Capsule :

Habitat : Tibet ; Kongbo region, 4,000-4,350 m.

RHODODENDRON GYMNOMISCUM, *Balf. f. & Ward.*

Illustration—

Habit : small shrub ; branchlets scaly and setulose ; leaf-bud-scales early deciduous.

Leaves : oblong-elliptic, mucronate, 1 in. long, $\frac{1}{2}$ in. broad, soon glabrous and reticulate above, densely clothed with rusty scales below ; leaf-stalks $\frac{1}{6}$ in. long.

Inflorescence : terminal, capitate, few-flowered ; flower-stalks $\frac{1}{6}$ in. long, *glabrous*.

Flowers : yellow.

Calyx : well developed, $\frac{1}{6}$ in. long, *scaly* and slightly fringed with hairs.

Corolla : narrowly tubular, $\frac{1}{2}$ in. long, *not scaly outside*, villous within.

Stamens : 5, included, glabrous.

Ovary : scaly : style very short, turbinate, glabrous.

Capsule :

Habitat : Tibet—Yunnan frontier, 14,000 ft.

RHODODENDRON LEDOIDES, *Balf. f. & W. W. Sm.* Flowers pale rose.

A. Flower. B. Corolla laid open. C. Stamen. D. Calyx and pistil.
E. Cross-section of ovary. F. Scales from leaf. (After *Bot. Mag.*)

RHODODENDRON LEDOIDES, *Balf. f. & W. W. Sm.*

(R. HEDYOSMUM, *Balf. f.*)

ILLUSTRATION—Hutchinson in *Bot. Mag.*, t. 8831 (1920).

HABIT : small shrub up to $2\frac{1}{2}$ ft., loosely branched ; young branchlets densely scaly and setose ; leaf-bud-scales early deciduous.

LEAVES : linear-lanceolate, acutely mucronate, $\frac{3}{4}$-$1\frac{1}{4}$ in. long, $\frac{1}{5}$-$\frac{1}{3}$ in. broad, leathery, closely scaly but soon glabrous above, closely covered with stalked flaky scales below ; leaf-stalks $\frac{1}{8}$ in. long.

INFLORESCENCE : densely capitate, subglobose, terminal, about $1\frac{1}{2}$ in. diameter ; bud-scales early deciduous ; flower-stalks $\frac{1}{16}$ in. long.

FLOWERS : pale rose.

CALYX : about $\frac{1}{10}$ in. long, divided to the base, *lobes glabrous* outside, densely fringed with hairs.

COROLLA : narrowly tubular, $\frac{1}{3}$ in. long, *not scaly outside*, villous within.

STAMENS : 5, included, filaments glabrous.

OVARY : scaly ; style very short, turbinate, glabrous.

CAPSULE : $\frac{1}{6}$ in. long, scaly, clothed for some time by the persistent corolla.

HABITAT : Yunnan, 12,000-13,000 ft., in open scrub.

RHODODENDRON LEPIDANTHUM, *Balf. f. & W. W. Sm.*

Illustration—

Habit : a small tortuously branched shrub up to 5 ft. high ; branchlets scaly and setulose ; leaf-bud-scales early deciduous.

Leaves : aromatic, broadly elliptic, $\frac{3}{4}$ in. long, $\frac{1}{3}$ in. broad, soon glabrous and impressed-reticulate above, covered below with loose flaky scales ; leaf-stalks $\frac{1}{6}$ in. long.

Inflorescence : terminal, capitate, about 8-flowered, the bud-scales soon falling off ; flower-stalks $\frac{1}{6}$ in. long, densely scaly.

Flowers : white.

Calyx : well developed, $\frac{1}{5}$ in. long, lobes oblong-lanceolate, *scaly outside*, not fringed.

Corolla : narrowly tubular, $\frac{1}{2}$ in. long, *not scaly outside*, villous within.

Stamens : 5, included, slightly hairy towards the base.

Ovary : scaly ; style very short, turbinate, glabrous.

Capsule :

Habitat : Yunnan, Lichiang Range, 11,000-14,000 ft., alpine pastures, ledges and crevices of cliffs.

RHODODENDRON NMAIENSE, *Balf. f. & Ward.*

Illustration—

Habit : dwarf shrub up to 3 ft. high ; branchlets lepidote ; leaf-bud-scales persistent.

Leaves : oblong, deeply emarginate, mucronate, about $\frac{3}{4}$ in. long, covered with long and short-stalked scales below.

Inflorescence : terminal, capitate, about 6-flowered ; flower-stalks $\frac{1}{12}$ in. long, scaly.

Flowers : yellow.

Calyx : *scaly* outside and on the margin.

Corolla : narrowly tubular, $\frac{2}{3}$ in. long, *not scaly outside*, pubescent within.

Stamens : 5, included, glabrous.

Ovary : scaly ; style very short, turbinate, glabrous.

Capsule :

Habitat : Eastern Upper Burma ; Nmai Divide, 12,000-13,000 ft.

RHODODENDRON PLATYPHYLLUM, *Balf. f. & W. W. Sm.*

ILLUSTRATION—

HABIT : shrub, with short twiggy branchlets, the leaf-bud-scales persistent, imbricate.

LEAVES : broadly elliptic, emarginate, about 2 in. long and nearly 1 in. broad, glabrous and deeply reticulate above, densely covered below with several layers of stalked flaky scales ; leaf-stalks nearly $\frac{1}{4}$ in. long.

INFLORESCENCE : terminal, densely capitate, several-flowered ; flower-bud-scales persistent during flowering ; flower-stalks $\frac{1}{6}$ in. long, loosely scaly.

FLOWERS : white.

CALYX : large, $\frac{1}{4}$ in. long, deeply lobed, *lobes scaly* outside and densely fringed with hairs.

COROLLA : broadly tubular, $\frac{3}{4}$ in. long, *not scaly outside*, villous within the throat.

STAMENS : 5, included, slightly hairy towards the base.

OVARY : scaly ; style very short, turbinate, glabrous.

CAPSULE :

HABITAT : Yunnan, Tali Range, 11,000-12,000 ft.

RHODODENDRON PRAECLARUM, *Balf. f. & Farrer.*

Illustration—

Habit : small decumbent shrub ; branchlets densely lepidote ; leaf-bud-scales early deciduous.

Leaves : elliptic or oblong-elliptic, mucronate, $\frac{3}{4}$ in. long, $\frac{1}{3}$ in. broad, soon glabrous above, loosely scaly below ; leaf-stalks $\frac{1}{6}$ in. long.

Inflorescence : terminal, capitate, about 8-flowered ; flower-stalks $\frac{1}{8}$ in. long, scaly.

Flowers : yellow.

Calyx : $\frac{1}{6}$ in. long, *densely scaly outside* and on the margin, but not ciliate.

Corolla : narrowly tubular, $\frac{2}{3}$ in. long, *not scaly outside*, hairy within.

Stamens : 5, included, glabrous.

Ovary : scaly ; style very short, turbinate, glabrous.

Capsule :

Habitat : Kansu, Thundercrown Range, rock surfaces and mossy banks.

RHODODENDRON PRIMULAEFLORUM, *Bureau & Franch.*

ILLUSTRATION—

HABIT : shrublet 1 ft. high ; branchlets scaly.

LEAVES : ovate-oblong, $\frac{3}{4}$-$1\frac{1}{4}$ in. long, about $\frac{1}{3}$ in. broad, shining above, whitish below and densely scaly, the scales contiguous ; leaf-stalks $\frac{1}{6}$ in. long.

INFLORESCENCE : terminal ; flower-stalks very short.

FLOWERS : yellow.

CALYX : small, lobes ciliate.

COROLLA : funnel-shaped, about $\frac{2}{3}$ in. long.

STAMENS : 5, glabrous.

OVARY : scaly ; style very short, turbinate, glabrous.

CAPSULE :

HABITAT : Southern Tibet, between Lhassa and Batang.

RHODODENDRON RADINUM, *Balf. f. & W. W. Sm.*

Illustration—

Habit : shrub up to 4 ft. high, with very short twiggy branchlets closely covered with scales and short bristles ; leaf-bud-scales early deciduous.

Leaves : narrowly oblanceolate, mucronate, $\frac{3}{4}$ in. long, $\frac{1}{6}$ in. broad, permanently scaly above, densely so below, the scales loose and flaky ; leaf-stalks $\frac{1}{12}$ in. long.

Inflorescence : terminal, capitate, several-flowered, bud-scales early deciduous ; flower-stalks very short.

Flowers : white flushed with rose.

Calyx : $\frac{1}{12}$ in. long, *scaly* outside and fringed with hairs.

Corolla : narrowly tubular, $\frac{1}{3}$ in. long, loosely *covered all over the outside with flaky scales*, villous inside the throat.

Stamens : 5, included, filaments glabrous.

Ovary : scaly ; style very short, turbinate, glabrous.

Capsule :

Habitat : Yunnan, Lichiang Range, 11,000-12,000 ft., open alpine pastures.

RHODODENDRON SARGENTIANUM, *Rehd. & E. H. Wils.*

Illustration--Hutchinson in *Bot. Mag.*, t. 8871 (1920).

Habit : small shrub about 2 ft. high, with short twiggy branchlets and persistent bud-scales, the young parts setulose and scaly.

Leaves : broadly elliptic, mucronate, about $\frac{1}{2}$ in. long and $\frac{1}{4}$ in. broad, soon glabrous and reticulate above, shining, clothed below with loose flaky scales ; leaf-stalks $\frac{1}{6}$ in. long, scaly.

Inflorescence : loosely capitate, few-flowered ; bud-scales early deciduous ; flower-stalks $\frac{1}{4}$ in. long, scaly.

Flowers : lemon yellow.

Calyx : well developed, $\frac{1}{6}$ in. long, loosely *scaly outside* and fringed with long hairs.

Corolla : rather widely tubular, $\frac{1}{2}$ to $\frac{2}{3}$ in. long, *densely scaly outside*, villous within.

Stamens : 5, included, glabrous.

Ovary : scaly ; style very short, turbinate, glabrous.

Capsule : $\frac{1}{6}$ in. long, scaly.

Habitat : Western Szechuan, 9000-11,000 ft.

RHODODENDRON SPHAERANTHUM, *Balf. f. & W. W. Sm.*

Illustration—

Habit : small shrub, with leggy branchlets covered with scales and short hairs, leaf-bud-scales early deciduous.

Leaves : narrowly oblong-lanceolate, mucronate, about 1 in. long and $\frac{1}{4}$ in. broad, soon glabrous and impressed-reticulate above, loosely covered with flaky scales below ; leaf-stalks $\frac{1}{8}$ in. long.

Inflorescence : terminal, capitate, several-flowered ; flower-bud-scales subpersistent during flowering ; flower-stalks short, scaly.

Flowers : pink.

Calyx : $\frac{1}{16}$ in. long, broadly lobed, lobes *glabrous* outside, densely fringed with hairs.

Corolla : narrowly tubular, $\frac{1}{2}$-$\frac{2}{3}$ in. long, glabrous or slightly pubescent outside but *not scaly*, densely villous in the throat.

Stamens : 5, included, pubescent towards the base.

Ovary : scaly ; style very short, turbinate, glabrous.

Capsule :

Habitat : Yunnan, 12,000-13,000 ft.

RHODODENDRON TRICHOSTOMUM, *Franch.*

ILLUSTRATION—

HABIT : small shrub, intricately-branched ; branchlets scaly ; leaf-bud-scales early deciduous.

LEAVES : narrowly oblanceolate, obtusely mucronate, about $\frac{1}{2}$ in. long and $\frac{1}{6}$ in. broad, scaly on the upper surface, covered below with very loose stalked flaky scales ; leaf-stalks $\frac{1}{12}$ in. long.

INFLORESCENCE : terminal, several-flowered, densely capitate ; flower-bud-scales persistent during flowering ; flower-stalks very short, slightly scaly.

FLOWERS : rose or white.

CALYX : lobes narrowly oblong, $\frac{1}{12}$ in. long, *densely scaly outside*, slightly ciliate.

COROLLA : narrowly tubular, $\frac{1}{3}$ in. long, *not scaly outside*, villous within the throat.

STAMENS : 5, included, glabrous.

OVARY : scaly ; style very short, turbinate, glabrous.

CAPSULE :

HABITAT : Yunnan, near Lankong, about 8000 ft.

CINNABARINUM SERIES

General Characters :—Leaves evergreen, lepidote, glaucous. Flowers arranged in lateral and terminal clusters. Calyx small and very shortly lobed, scaly. Corolla *tubular-cylindric*, thick and fleshy, glabrous outside ; lobes 5, erect or suberect. Stamens 10, slightly pubescent. Ovary 5-celled, scaly ; *style pubescent.* Capsule up to $\frac{1}{2}$ in. long.

Distribution :—Sikkim and Bhutan Himalayas, 9000-16,000 ft.

A small and very distinct group confined to the Eastern Himalaya and without its counterpart in China or elsewhere. The thick fleshy comparatively straight corolla with suberect lobes is characteristic, as also the pubescent style. The true affinity of the group is not very obvious and it stands somewhat isolated in the lepidote-leaved section.

J. H.

KEY TO THE SPECIES

A. Corolla $1\frac{1}{4}$-2 in. long ; scales on the lower surface of the leaves very small and close, fleshy ; flowers cinnabar-red with yellowish or greenish corolla-lobes . **cinnabarinum.**

A. Corolla $\frac{3}{4}$ in. long ; scales about their own diameter apart, with a thin margin ; flowers pink, with cream corolla-lobes . . . . . **Keysii.**

RHODODENDRON CINNABARINUM, *Hook. f.*

Illustration—Hook. f. *Rhod. Himal.*, t. 8 (1849).

Habit : shrub up to about 6 ft. high ; branchlets purplish, sparingly scaly when young.

Leaves : obovate-elliptic to broadly oblanceolate, rounded to a mucronate apex, rounded to shortly subacute at the base, up to 3 in. long and $1\frac{3}{4}$ in. broad, densely scaly and glaucous below, the scales very small and fleshy and *scarcely their own diameter apart*, the numerous lateral nerves distinct on the upper surface ; leaf-stalks about $\frac{1}{2}$ in. long, slightly scaly.

Inflorescence : terminal, subumbellate, about 5-flowered * ; flower-stalks recurved, about $\frac{1}{4}$ in. long, scaly.

Flowers : cinnabar-red, much like those of a *Lapageria*.

Calyx : unequally lobed, one lobe often longer than the others, sometimes rim-like.

Corolla : tubular, slightly widened towards the top, about $1\frac{1}{2}$-2 in. long, not scaly outside, 5-lobed.

Stamens : 10, very slightly pubescent towards the base, only slightly exserted.

Ovary : 5-celled, scaly ; style a little longer than the stamens, hairy towards the base.

Capsule : $\frac{1}{2}$ in. long, closely scaly.

Habitat : Sikkim Himalaya : 10,000-12,000 ft.

A somewhat variable species, the extremes of which appear rather distinct. The varieties may be distinguished as follows :—

var. *Blandfordiaeflorum* ; flowers red outside, yellow or greenish-yellow within ; calyx rim-like (*Bot. Mag.*, t. 4930).

var. *Roylei* ; flowers intense rosy red ; corolla more open, shorter (about $1\frac{1}{4}$ ins.) than the others ; calyx lobes nearly equal (*Bot. Mag.*, t. 4788).

* I have never seen an example with numerous flowers in the inflorescence as shown in Hooker's plate (*Rhod. Sikk. Himal.*, t. 8).

J. H.

RHODODENDRON CONCATENANS, *Hutchinson* in *Gard. Chron.*, xcvii. (1935), 376.

Illustration—

Habit : shrub, with short branchlets, the older ones covered with brown bark and numerous black scales, prominently marked with the large scars of the fallen leaves ; one-year-old shoots densely lepidote.

Leaves : evergreen, oblong or oblong-elliptic, rounded at each end, obtusely mucronate at the apex, 4-6 cm. long, 2-3 cm. broad, glabrous above, closely reticulate, purple-tinged below with very numerous scales, these a quarter to half their own diameter apart and densely papillous between ; stalk 0·5-1 cm. long, nearly flat.

Inflorescence : 7-8-flowered, shortly racemose ; flower-bud scales purplish, densely lepidote outside and fringed with soft hairs, soon falling off ; bracts narrowly oblanceolate, lepidote and ciliate ; stalks 1-1·5 cm. long, lepidote.

Flowers : apricot, faintly tinged outside with pale purple.

Calyx : unequally 5-lobed, up to 4 mm. long, the upper lobe largest, densely scaly outside, here and there shortly ciliate.

Corolla : 4 cm. long, limb about 5 cm. diameter ; tube campanulate, with 5 half-spreading ovate-rounded lobes ; tube and lobes without scales outside.

Stamens : 10, unequal, the longest a little longer than the tube ; filaments hairy in the lower half or third ; anthers dull chocolate-brown.

Pistil : ovary 5-celled, completely covered with fleshy green scales ; style about as long as corrolla, with a few minute hairs near the base ; stigma large and deeply 5-lobed.

Habitat : originally described from a living specimen grown at Nymans, Sussex, from Ward's seed, No 5874.

RHODODENDRON IGNEUM, *Cowan* in *Notes R.B.G. Edin.*, vol. 19 (1937), 235.

Illustration—

Habit : a shrub, 8-12 ft., with rather few leaves ; branchlets slender and sparingly scaly when young.

Leaves : lamina elliptic, broadly elliptic or subovate, 3-7 cm. long, 2-3 cm. broad ; apex acute or obtuse conspicuously mucronate ; base obtuse or sub-attenuate ; upper surface green, sparingly scaly ; midrib slightly impressed ; under surface pale olive green, scaly, the scales 2 or more times their own diameter apart, primary veins 10-12 on each side ; petiole 5-6 mm. long, densely scaly.

Inflorescence : 2-3 flowers, subterminal on the main shoot and from short lateral branches.

Pedicels : about 1 cm. long, densely scaly.

Calyx : small, 1·5 cm. long, at base cup-shaped, scaly ; lobes 5, subequal, fringed with hairs and scales.

Corolla : tubular, 2 cm. long, bright salmon ; lobes 5-6, triangular or subovate, about 4 mm. long.

Stamens : 10-12, 2-2·5 cm. long, longer than corolla ; filaments sparsely villous.

Pistil : about 3 cm. long ; ovary 4 mm. long, densely scaly ; style long, exserted, hairy at base.

Capsule :

Habitat : South-Eastern Tibet, Chayul Chu Lung. In dense mixed forest at 8,000 ft.

Akin to *Rh. Keysii* with larger salmon-coloured flowers with longer calyx lobes and broader leaves with fewer scales below.

RHODODENDRON KEYSII, *Nutt.*

ILLUSTRATION—*Bot. Mag.*, t. 4875 (1855).

HABIT : a leggy shrub ; branchlets densely scaly when young,

LEAVES : scattered on the young shoots, oblong-lanceolate, obtusely mucronate, 3-4 in. long, $\frac{3}{4}$-$1\frac{1}{4}$ in. broad, densely scaly on both surfaces, the scales below unequal-sized, the larger ones *about their own diameter apart*, broadly fleshy in the middle with a narrow margin ; lateral nerves fairly distinct ; leaf-stalks about $\frac{1}{2}$ in. long.

INFLORESCENCE : from clustered lateral and terminal buds, each shortly racemose ; flower-stalks about $\frac{1}{3}$ in. long, scaly.

RHODODENDRON KEYSII, *Nutt.* Flowers pink with cream-coloured corolla lobes.

A. Lower portion of leaf. B. Scale therefrom. C. Stamen. D. Pistil. E. Cross-section of ovary. F. Fruit.

FLOWERS : pink, with paler somewhat cream-coloured lobes.

CALYX : small and shortly 5-lobed, glabrous outside.

COROLLA : tubular, slightly ventricose, $\frac{3}{4}$ in. long, shortly 5-lobed, lobes erect, glabrous outside.

STAMENS : 10, nearly as long as the corolla, pubescent in the lower part.

OVARY : 5-celled, densely glandular-scaly ; style pubescent in the lower third.

CAPSULE : $\frac{2}{5}$ in. long, 5-celled, scaly.

HABITAT : Bhutan ; summits and northern ridges of Himalayas, 9000-16,000 ft.

DAURICUM SERIES

General Characters :—Small shrubs with scaly branchlets. Leaves deciduous or subpersistent, scaly below. Inflorescence terminal, 1-2-flowered. Flowers precocious, mauve or pink. Calyx very short. Corolla widely funnel-shaped, medium-sized, pubescent outside. Stamens 10, exserted, pubescent. Ovary scaly ; style glabrous. Capsule small.

Distribution : — North-Central to North-Eastern Asia to Japan.

A small indefinite group intermediate between the typical *Rhododendron* and *Azalea*.

J. H.

KEY TO THE SPECIES

Leaves subpersistent, rounded at each end . . **dauricum**.
Leaves deciduous, acute ; flowers precocious . **mucronulatum**.

RHODODENDRON DAURICUM, *Linn.* Flowers pink.
A. Lower surface of leaf. B. Calyx and pistil. C. Stamen.

RHODODENDRON DAURICUM, *Linn.*

(R. FITTIANUM, *Balf. f.*)

ILLUSTRATION—*Bot. Mag.*, t. 636 (1803).

HABIT : shrub ; branchlets scaly and pubescent.

LEAVES : elliptic, rounded at each end, mucronate at the apex, $\frac{3}{4}$-$1\frac{1}{4}$ in. long, $\frac{1}{3}$-$\frac{2}{3}$ in. broad, loosely scaly and dark green above, *densely scaly below*, the scales more or less contiguous or overlapping ; leaf-stalks $\frac{1}{16}$ in. long.

INFLORESCENCE : terminal, 1-2-flowered ; flower-bud-scales early deciduous ; flower-stalks $\frac{1}{3}$ in. long, softly puberulous, not scaly.

FLOWERS : pink.

CALYX : very short, densely scaly outside.

COROLLA : widely funnel-shaped, about $\frac{3}{4}$ in. long, softly pubescent outside.

STAMENS : 10, exserted, pubescent in the lower part.

OVARY : densely scaly ; style glabrous, slightly longer than the stamens.

CAPSULE : $\frac{1}{2}$ in. long, straight, scaly.

HABITAT : North-Central to North-Eastern Asia, and Japan.

RHODODENDRON MUCRONULATUM, *Turcz.*

ILLUSTRATION—Hemsley in *Bot. Mag.*, t. 8304 (1910).

HABIT : a small shrub ; branchlets sparingly scaly.

LEAVES : deciduous, elliptic-lanceolate or lanceolate, acute and mucronate, narrowed to the base, very thin, $1\frac{1}{4}$-3 in. long, up to $1\frac{1}{4}$ in. broad, scaly on both surfaces, the scales below about *2-3 times their own diameter apart* ; leaf-stalks about $\frac{1}{12}$ in. long, scaly.

INFLORESCENCE : terminal, clustered at the ends of the shoots, each 1-flowered ; flower-bud-scales persistent during flowering ; flower-stalks very short, loosely scaly.

FLOWERS : bright mauve-pink, precocious.

CALYX : very short, densely scaly outside.

COROLLA : widely funnel-shaped, about $1\frac{3}{4}$ in. long, softly pubescent outside.

STAMENS : 10, exserted, pubescent towards the base.

OVARY : scaly ; style glabrous, about as long as the longest stamens.

CAPSULE : $\frac{1}{2}$ in. long, curved, scaly.

HABITAT : North-Eastern Asia and Japan, about 1000 ft.

var. **acuminatum,** Hort. ; flowers several weeks later than the typical form, and is of slightly different habit (syn. *R. acuminatum,* Hort.).

EDGEWORTHII SERIES

General Characters :—Mostly epiphytic shrubs with densely woolly branchlets. Leaves evergreen, often strongly bullate on the upper surface, densely covered with woolly hairs below and also scaly. Inflorescence terminal, 2-3-flowered. Calyx large, with broad often coloured lobes. Corolla fleshy, broadly tubular or openly funnel-shaped, mostly fragrant, scaly outside, 5-lobed. Stamens 10, exserted, pubescent. Ovary 5-celled, tomentose and also sometimes scaly ; style stout, long, scaly or pubescent near the base. Capsule woolly and scaly outside.

Distribution :—Eastern Himalaya, Northern Burma and Yunnan, up to 12,000 ft.

This is one of the most distinct of the series, long known in gardens through *R. Edgeworthii*. The association of both woolly hairs and scales on the lower surface of the leaves is an unusual feature.

J. H.

KEY TO THE SPECIES

A. Leaves strongly bullate on the upper surface :

B. Style woolly-hairy but not scaly in the lower third ; calyx-lobes covered with long hairs outside . **Edgeworthii.**

B. Style scaly as well as hairy towards the base ; calyx-lobes covered with small scales outside . . . **bullatum.**

B. Style glabrous ; calyx-lobes fringed with hairs, not scaly outside . . . . . **seinghkuense.**

A. Leaves not bullate on the upper surface :

B. Leaves over 5 in. long and 2 in. broad ; calyx $\frac{1}{2}$ in. long **sciaphilum.**

B. Leaves $1\frac{1}{4}$-2 in. long, $\frac{3}{4}$-$1\frac{1}{4}$ in. broad ; calyx $\frac{1}{4}$ in. long **pendulum.**

RHODODENDRON BULLATUM, *Franch.*

Illustration—*Gard. Chron.*, 1923 : 243 (photo.).

Habit : loosely branched shrub up to 8 ft. high ; branchlets densely and softly woolly.

Leaves : ovate-elliptic, abruptly acuminate, rounded at the base, 2-4 in. long, 1-1¾ in. broad, bullate above, loosely woolly-tomentose below and densely punctate, with very distinct lateral nerves ; leaf-stalks ½ in. long, woolly.

Inflorescence : terminal, 2-3-flowered ; flower-stalks ½-¾ in. long, densely woolly-tomentose.

Flowers : as in *R. Edgeworthii*, very fragrant.

Calyx : deeply lobed, ½-⅔ in. long, lobes very broad, densely fringed with hairs, *scaly outside.*

Corolla : 2-2½ in. long, scaly outside, 5-lobed.

Stamens : 10, pubescent in the lower part.

Ovary : 5-6-celled, densely woolly ; style stout, *finely scaly as well as slightly hairy* towards the base.

Capsule : as in *R. Edgeworthii.*

Habitat : Yunnan ; 8000-10,500 ft., on ledges and crevices of cliffs.

RHODODENDRON EDGEWORTHII, *Hook. f.* Flowers white or tinged with pink.

A. Flower with corolla and stamens removed. B. Stamen. C. Cross-section of ovary. D. Fruit. (Adapted from *Hook. f.*)

RHODODENDRON EDGEWORTHII, *Hook. f.*

Illustration—Hook. f. *Rhod. Sikkim Himal.*, t. 21 (1849); *Bot. Mag.*, t. 4936 (1856).

Habit: usually epiphytic; branchlets *densely woolly-tomentose.*

Leaves: elliptic or ovate-elliptic, acutely acuminate and mucronate, shortly cuneate at the base, about 4 in. long and $1\frac{3}{4}$ in. broad, strongly *bullate on the upper surface,* densely *cobwebby-tomentose* below; leaf-stalks $\frac{1}{2}$-$\frac{3}{4}$ in. long, woolly.

Inflorescence: terminal, 2-3-flowered; flower-stalks $\frac{3}{4}$ in. long, stout, *densely woolly.*

Flowers: white or tinged with pink, *scented.*

Calyx: large, deeply 5-lobed, lobes $\frac{1}{2}$-$\frac{3}{4}$ in. long, densely fringed with hairs and *hairy outside.*

Corolla: broadly tubular, 5-lobed, slightly scaly outside, about 3-4 in. long.

Stamens: 10, exserted, pubescent in the lower half.

Ovary: 5-6-celled, densely hairy; style longer than the stamens, *woolly in the lower third but not scaly.*

Capsule: $1\frac{1}{4}$ in. long, woolly and scaly outside.

Habitat: Sikkim and Bhutan Himalaya; 7000-10,000 ft., mostly on old trees.

RHODODENDRON PENDULUM, *Hook. f.*

Illustration—Hook. f. *Rhod. Sikkim Himal.*, t. 13 (1849).

Habit : epiphytic shrub with trailing branches ; young branchlets *densely woolly*.

Leaves : elliptic or oblong-elliptic, mucronate, obtuse at the base, $1\frac{1}{4}$-2 in. long, $\frac{3}{4}$-$1\frac{1}{4}$ in. broad, thick and leathery, glabrous and impressed-reticulate above, densely woolly-tomentose and glandular-punctate below ; leaf-stalks $\frac{1}{4}$ in. long, woolly.

Inflorescence : terminal, 2 - 3 - flowered ; flower - stalks densely woolly.

Flowers : white, tinged inside with yellow.

Calyx : deeply lobed, $\frac{1}{4}$ in. long, lobes broadly elliptic, densely fringed with hairs, thinly scaly outside near the base.

Corolla : shortly and broadly tubular, 5-lobed, loosely scaly outside.

Stamens : 10, shortly exserted, pubescent below the middle.

Ovary : 5-celled, bristly-hairy and scaly ; style glabrous, reddish.

Capsule : $\frac{1}{2}$ in. long, pilose and scaly.

Habitat : Sikkim Himalaya ; 10,000-12,000 ft.

RHODODENDRON SCIAPHILUM, *Balf. f. & Ward.*

Illustration—

Habit : dwarf shrub 1½-2 ft. high ; branchlets tomentose.

Leaves : elliptic-oblong or narrowly obovate, about 5½ in. long and 2¼ in. broad, rounded or subcordate at the base, somewhat rugose above, densely cinnamon-tomentose below ; leaf-stalks ¾ in. long, tomentose.

Inflorescence : terminal, 2-3-flowered ; flower-stalks ½ in. long, tomentose.

Flowers : *not fragrant*, white.

Calyx : pink, ½ in. long, lobed beyond the middle, sparingly *scaly outside and hairy*, ciliate on the margin.

Corolla : tubular-campanulate, 1¾ in. long, scaly outside, glabrous within.

Stamens : 10-11, pubescent, exserted.

Ovary : tomentose, style *pubescent* at the base.

Capsule :

Habitat : Eastern Upper Burma ; Naung Chaung Valley, 7000-8000 ft., on dead fallen tree-trunks or on the ground in deep shade of rain forest.

RHODODENDRON SEINGHKUENSE, *Ward.*

Illustration—

Habit : an epiphytic undershrub ; branchlets woolly-villous ; leaf-bud-scales subpersistent, spathulate, fringed with long hairs.

Leaves : ovate to oblong-elliptic, abruptly acuminate, rounded at the base, 1½-3 in. long, ⅔-1½ in. broad, glabrescent with impressed nerves above, rufous-tomentose below ; leaf-stalks ⅓ in. long, tomentose.

Inflorescence : terminal, 1-flowered ; flower-stalks ¾ in. long, woolly.

Flowers : bright sulphur-yellow, with red-brown anthers.

Calyx : large, ⅓ in. long, lobes rounded, fringed with long crisped hairs, not scaly outside.

Corolla : broadly bell-shaped, ¾-1 in. long, the tube loosely scaly outside but not pubescent.

Stamens : 10, exserted, villous in the lower half ; anthers ⅛ in. long.

Ovary : 5-celled, densely woolly-villous ; style short and curved, glabrous.

Capsule : not seen.

Habitat : Burma ; Seinghku Wang, 6000-10,000 ft., on moss-bound trees in forest, *Ward* 6793 (type) ; *Ward* 6737.

FALCONERI SERIES

The Falconeri series is a very distinct one. In distribution it extends from Nepal eastward through the Himalayas into Upper Burma, Yunnan and Szechuan. It is recognised from all but the Grande series by the large non-scaly tomentose leaves, by the small calyx, by the mortar-shaped or ventricose corolla with 7-10 lobes, by the 12-18 stamens and the 7-18-chambered ovary. By these characters the two series are distinguished from all other rhododendrons. The Falconeri series is separable from the Grande series by the very characteristic indumentum of the under surface of the leaf. This is composed of two layers : the upper, more or less detersile, consists of distinctive cup or funnel-shaped hairs which are found in no other series ; the under forms a thin skin which shows up if the upper layer has fallen away, and when that happens the species in leaf-indumental characters simulate members of the Grande series, no members of which, however, have cup or funnel-shaped indumental hairs as an upper layer.

There is a close relationship between the Himalayan and the Chinese species. *R. arizelum* is closely connected with *R. Falconeri* and has almost identical indumentum. In the same way *R. Rex* and *R. coriaceum* represent in China *R. Hodgsonii* of the Himalayas. *R. basilicum* and its associated forms extends from the Burmese frontier northwards into Yunnan. Two of these associated forms hitherto treated as species, viz. *R. regale* and *R. megaphyllum*, have not been given specific rank. *R. regale* is an imperfectly known species and is not in cultivation. *R. megaphyllum* may prove to be a distinct form of *R. basilicum*. The most divergent member of the series is *R. galactinum*, a Szechuan outlier with a glabrous ovary. In its funnel-campanulate corolla, with at times only 5 lobes, *R. coriaceum* is also a somewhat aberrant member of the series, as is the recently discovered *R. lanigerum* which has a 5-lobed corolla.

H. F. T.

FALCONERI SERIES

KEY TO THE SPECIES

A. Petiole long, cylindric with non-decurrent leaf-blade:
 B. Indumentum rusty-red, rarely fawn:
  C. Ovary glandular:
   D. Leaves and petioles not scurfy above:
    E. Corolla creamy-white . . . . . **Falconeri.**
    EE. Corolla rose-purple . . . . . **decipiens.**
   DD. Leaves and petioles dense scurfy above. Flowers rose . . . . . **eximium.**
  CC. Ovary non-glandular:
   D. Leaves obovate, broad at apex, upper surface distinctly rugose:
    E. Leaves broadest above middle, base cuneate:
     F. Indumentum thick . . . . . **arizelum.**
     FF. Indumentum thin . . . . . **preptum.**
    EE. Leaves broadest at middle, base rounded **sino-Falconeri.**
   DD. Leaves oblanceolate, upper surface smooth or slightly rugulose . . . . . **fictolacteum.**
 BB. Indumentum grey to fawn. (Sometimes rusty in *R. Hodgsonii*):
  C. Ovary tomentose, foliage bud-scales with long-pointed tips:
   D. Flowering shoots very thick (1·5 cm.), leaves broadly oblanceolate:
    E. Corolla lobes 7-8:
     F. Flowers rose-purple, unspotted . . . **Hodgsonii.**
     FF. Flowers rose, spotted . . . . . **rex.**
    EE. Corolla lobes 5 . . . . . **lanigerum.**
   DD. Flowering shoots slender (5-8 mm.), leaves narrowly oblanceolate . . . . . **coriaceum.**
  CC. Ovary glabrous, foliage bud-scales blunt, rounded, fringed . . . . . **galactinum.**
AA. Petiole short and flat with decurrent leaf-blade . **basilicum.**

RHODODENDRON ARIZELUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 12 (1920), 90.

Illustration—

Habit : a shrub or small tree of 10-20 ft. with thick gnarled branches ; young shoots clothed with a cinnamon or greyish tomentum ; foliage-bud conical, outer scales with pointed tips, greyish-fawn tomentose.

Leaves : lamina oval, obovate or oblanceolate, about 15 cm. long and 8 cm. broad ; apex rounded, notched or retuse ; base obtuse or slightly cordate ; upper surface dark green, rugulose ; under surface clad with a thick persistent cinnamon or brown indumentum ; primary veins 11-14 on each side, more or less concealed by the leaf indumentum ; petiole 2·5-3 cm. long, cylindric, not grooved, fawn-tomentose.

Inflorescence : a racemose umbel of 15-25 flowers ; rhachis 2·5-3·5 cm. long, cinnamon tomentose.

Pedicels : 2·5 cm. long, fawn-tomentose, obliquely thickened below calyx.

Calyx : short, tomentose, with 8 minute triangular teeth.

Corolla : obliquely campanulate, white, creamy yellow, yellow tinged rose, with crimson blotches at base, 4·5 cm. long ; lobes 8.

Stamens : 16, 1·5-2·5 cm. long ; filaments puberulous at the base.

Pistil : about 4 cm. long ; ovary conoid, truncate, 1 cm. long, densely tomentose with fasciate hairs, 12-15-chambered ; style glabrous.

Capsule : oblong cylindric, slightly curved, about 3 cm. long, 7 mm. broad, rusty tomentose or greyish.

Habitat : Western Yunnan ; North-Eastern Upper Burma ; south-Eastern Tibet. Open situations in rhododendron forests at 10,000-12,000 ft. altitude.

R. arizelum is more closely related to the Himalayan *R. Falconeri* than to any Chinese species at present known. Young plants in cultivation have the rugose leaves and thick persistent rusty-brown leaf indumentum of *R. Falconeri*. Forms from Tsarong are distinguished by narrow oblanceolate leaves with fawn-coloured indumentum. From North-Eastern Upper Burma and South-Eastern Tibet gatherings have been made of a form with rose-coloured flowers.

RHODODENDRON BASILICUM, *Balf. f. & W. W. Sm.* (Original drawing.)

A. Base of leaf showing short broad petiole. B. Section of petiole. C. Pistil. D. Indumentum hair from leaf under surface. E. Corolla and pedicel. All slightly reduced except D, which is much enlarged.

RHODODENDRON BASILICUM, *Balf. f. & W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 9 (1916), 214.

(R. MEGAPHYLLUM, *Balf. f. & Forrest*; R. REGALE, *Balf. f. & Ward.*)

ILLUSTRATION—

HABIT: a shrub or tree of 10-30 ft. with young shoots rufous tomentose, later grey; foliage-bud conical-globose, scales broadly ovate, acuminate, tomentose.

LEAVES: lamina broadly ovate to oblanceolate, 13-32 cm. long, 7·5-17 cm. broad; apex rounded; base tapered from broadest part, obtuse to cuneate, more or less decurrent on petiole; upper surface dark green, glabrous with here and there vestiges of juvenile tomentum; under surface deep cinnamon to fawn-grey, uniformly clothed with a somewhat spongy indumentum, the upper stratum more or less detersile, and when worn off revealing a grey skin-like under stratum, midrib prominent; petiole 2-3·5 cm. long, widened at the base and flat above with marginal wings or ridges.

INFLORESCENCE: a large corymbose raceme of about 25 flowers; rhachis 3·5 cm. long.

PEDICELS: 2·5-3 cm. long, pale cinnamon-tomentose.

CALYX: small, tomentose, teeth broadly triangular.

COROLLA: broadly-campanulate, fleshy, pale yellow or tinted crimson with a crimson blotch at base, 3·5 cm. long; lobes 8.

STAMENS: 16, unequal, 2-2·7 cm. long; filaments glabrous.

PISTIL: 3·5 cm. long, equalling corolla; ovary ovoid-conoid, densely tomentose with fasciate hairs, 9-15-chambered; style glabrous.

CAPSULE: straight or slightly curved, about 4 cm. long, 1 cm. broad, densely rufous-tomentose.

HABITAT: Western Yunnan; Shweli — Salween and N'Maikha—Salween Divides. In rhododendron forests at 10,000-11,000 ft. altitude.

This is the only member of the series with flat petioles, more or less winged. An interesting parallel is found in some of the Grande series. *R. coryphaeum* and its allies show the same leaf form, but the leaf indumentum of *R. basilicum* is distinctly that of the Falconeri series. The ample material of recent gatherings indicate that *R. megaphyllum*, Balf. f. & Forrest, and *R. regale*, Balf. f. & Ward, should both be referred to this species.

RHODODENDRON CORIACEUM, *Franch.* in *Journ. de Bot.*, vol. 12 (1898), 258.

(R. FOVEOLATUM, *Rehd. & Wils.*)

ILLUSTRATION—

HABIT : shrub or tree 10-25 ft. high ; young branches grey-white, 5-8 mm. in diameter ; foliage-bud conical, grey-white tomentose, outer scales acuminate with pointed tips.

LEAVES : lamina narrowly oblanceolate, 10-18 cm. long, 3-6 cm. broad ; apex obtuse or rounded ; base cuneate or rounded ; upper surface light green, smooth ; under surface ash-grey to pale fawn, clothed with a foveolate indumentum, the upper stratum more or less deciduous, primary veins 12-16 on each side, slightly raised ; petiole 2·5-3 cm. long, cylindric, grooved above.

INFLORESCENCE : a lax corymbose raceme of about 15-20 flowers ; rhachis 1-1·5 cm. long.

PEDICELS : 2 cm. long, clad with fawn tomentum.

CALYX : minute, with 7 short teeth, tomentose.

COROLLA : funnel-campanulate, 3·5 cm. long, white or white-flushed rose, with crimson blotches at base and with or without crimson spots on posterior side within ; lobes 5-7.

STAMENS : 10-14, unequal, 1·5-2·5 cm. long ; filaments puberulous.

PISTIL : 3 cm. long, slightly exceeding length of corolla tube ; ovary 8 mm. long, with a fawn or brownish tomentum of short floccose hairs, chambers 7-10 ; style glabrous.

CAPSULE : more or less curved, narrow for the series, less than 1 cm. broad, 3-3·5 cm. long, distinctly ribbed, sparsely clothed with short rusty-brown hairs.

HABITAT : Yunnan and South-Eastern Tibet ; Mekong—Salween and Salween—Kiu chiang Divides. In rhododendron forest and thickets at 10,000-13,000 ft. altitude.

R. coriaceum is a very distinct member of the series characterised by the relatively thin branches, long narrow leaves tapered to the base and grey-white leaf indumentum. Its nearest relative is *R. rex*, which has a similar type of leaf covering but differs in its thick branches and larger leaves.

RHODODENDRON DECIPIENS, *Lacaita* in *Journ. Linn. Soc.* (*Bot.*), vol. 43 (1916), 473.

ILLUSTRATION—

HABIT : a small tree of the habit of *R. Hodgsonii.*

LEAVES : lamina elliptic or obovate-elliptic, 17-18 cm. long ; apex rounded obtuse ; base narrowed or subcordate ; upper surface rugose (less so than in *R. Falconeri*) ; under surface at first rusty-tomentose, the upper layer later detersile leaving a paler under stratum not unlike that of *R. Hodgsonii* ; petiole stout, 3-3·5 cm. long.

INFLORESCENCE : a terminal corymb of 25-30 flowers.

PEDICELS : about 2 cm. long.

CALYX : short.

COROLLA : ventricose-campanulate of the form and purple-rose colour of *R. Hodgsonii.*

STAMENS : filaments puberulous.

PISTIL : ovary tomentose and glandular.

CAPSULE :

HABITAT : Sikkim, between Chiabanjan and Singalela.

This is an imperfectly known species. It has been suggested that it is a hybrid between *R. Falconeri* and *R. Hodgsonii.* Mr. Lacaita says, " When on the spot I assumed this from its colour and general appearance to be a variant of *R. Hodgsonii,* among which it grows promiscuously." The late Sir Isaac Bayley Balfour says, " There would seem to be constructional ground for the suggestion that we have here a natural hybrid," and he suggests that growers of *R. Falconeri* and *R. Hodgsonii* should look at their plants for forms which may match this one. " One hears of the occurrence of purple and rose-coloured flowers on plants which have the porte of *R. Falconeri* but which are not *R. eximium,* and it may be that amongst these *R. decipiens* will be found." The leaves of young plants in cultivation under the name *R. decipiens* resemble closely the leaves of *R. Falconeri,* and do not suggest affinity with *R. Hodgsonii.*

RHODODENDRON EXIMIUM, *Nutt.* in *Hook. Kew Journ. Bot.*, vol. 5 (1853), 364.

Illustration—*Bot. Mag.*, vol. 119 (1893), t. 7317.

Habit: a tree as much as 30 ft. high; young shoots rusty-tomentose; foliage-bud conical, densely clothed with rusty tomentum.

Leaves: lamina oval or oboval-elliptic, 15-20 cm. long, 5-10 cm. broad; apex obtuse to rounded, sometimes emarginate; base rounded, obtuse; upper surface of one-year-old leaves clothed with a dense fluffy rust-coloured tomentum, the older leaves glabrescent, rugulose, dark green, veins and veinlets deeply impressed; under surface clothed with a persistent deep cinnamon to rust-coloured indumentum, midrib, primary veins and veinlets raised giving shallow alveolations as in *R. Falconeri*; petiole 4-5 cm. long, 7 mm. in diameter, cylindric, clothed with shaggy rusty tomentum which persists longer on the petiole than on the leaf upper surface.

Inflorescence: a corymbose raceme of 12-20 flowers; rhachis stout 3-4 cm. long.

Pedicels: 4·5 cm. long, densely glandular and floccose-tomentose.

Calyx: short, glandular and floccose.

Corolla: oblique-campanulate, ventricose, 4·5 cm. long, fleshy, rose or pink tinted; lobes 8-10.

Stamens: 10-14, unequal, 2-3 cm. long; filaments hairy at base.

Pistil: about 4·5 cm. long; ovary conoid, 8 mm. long, densely glandular, 12-16-chambered; style glabrous or glandular at base; stigma large, discoid.

Capsule: 3-4 cm. long, cylindric, 1-2 cm. broad.

Habitat: Bhutan; Oola Mountains. In forests on rocky spurs, often forming thickets, at 10,000-11,000 ft. altitude.

R. eximium can be confused only with *R. Falconeri*, of which species by some it is considered to be a variety. Marks of distinction are: (1) the dense scurfy tomentose covering of the petioles and leaf upper surface. This covering is ultimately deciduous, but may persist for one or more years. The indumentum of the leaf upper surface of *R. Falconeri* quickly disappears. (2) The rose-coloured corolla. In cultivation *R. eximium* does not appear to attain the size of *R. Falconeri*.

RHODODENDRON FALCONERI, *Hook. f.* (Original drawing.)

A. Section of petiole. B. Base of leaf showing long rounded petiole. C. Indumentum hairs of leaf under surface. D. Pistil. E. Stamen. F. Pedicel and corolla. G. Section of ovary. H. Gland from ovary. I. Hair from ovary. All slightly reduced except A, C, G, H and I, which are enlarged.

RHODODENDRON FALCONERI, *Hook. f.* in *Rhodo. Sikkim Himal.* (1849), 11.

Illustrations—Hook. f. in *Rhodo. Sikkim Himal.* (1849), t. 10; *Bot. Mag.*, vol. 82 (1856), t. 4924.

Habit: a large shrub or tree reaching 40-50 ft.; old branches cinnamon with flaking bark; young shoots stout, grey-fawn tomentose; foliage-bud large conical, greenish-fawn tomentose, the outer scales thick at base tapering to long narrow points.

Leaves: lamina oblong-oval to elliptic or broadly obovate, 20-30 cm. long, 5-15 cm. broad; apex obtuse-rounded; base rounded-subcordate; upper surface dark mat green, rugulose with primary veins and veinlets deeply impressed; under surface clothed with a dense rust-coloured indumentum; midrib, primary veins and veinlets raised giving shallow alveolations; petiole 4-6 cm. long, cylindric, slightly grooved above, clothed with a thin greyish-white tomentum.

Inflorescence: a compact rounded corymb of 20 or more flowers; rhachis stout, 3-4 cm. long.

Pedicels: 4-5 cm. long, buff or pinkish, tomentose or tomentose and glandular, the glands in some forms predominating.

Calyx: small, with 8 small teeth more or less tomentose and glandular.

Corolla: oblique-campanulate, ventricose on the lower side, 4-6 cm. long, creamy-white, yellowish or shaded to lilac with dark purple blotches at base; lobes 8-10 (usually 8).

Stamens: 12-16, 1·5-4·5 cm. long; filaments glabrous or puberulous at the base.

Pistil: 3·5-5·5 cm. long; in fully opened flowers the style is exserted; ovary conoid, 5-10 mm. long, clothed with glands and branched hairs; sometimes the glands predominate and give a glutinous surface, in other forms the glands are hidden by the long fasciate hairs or are absent, 16-18-chambered; style stout, glabrous or at base glandular or tomentose, widened towards the broad discoid stigma.

Capsule: large, woody, set obliquely on the elongate stalk; 4-6 cm. long, 1·5 cm. broad, ridged, warted with shrivelled glands.

Habitat: The Himalayas from Nepal to Bhutan, at about 10,000 ft. altitude.

This Himalayan species is well known in cultivation and was the first of the series to be described. The Yunnan species, *R. arizelum*, is a close ally.

RHODODENDRON FICTOLACTEUM, *Balf. f.* in *Gard. Chron.*, 3rd series, vol. 59 (1916), 168; *Trans. Bot. Soc. Edin.*, vol. 27 (1916), 97.

(R. LACTEUM, *var.* MACROPHYLLUM, *Franch.*)

ILLUSTRATIONS—*Bot. Mag.*, vol. 137 (1911), t. 8372, under the name *R. lacteum*, Franch.

HABIT: a shapely tree of 15-45 ft.; young shoots cinnamon-tomentose; foliage-bud conical, outer scales long with pointed tips.

LEAVES: lamina oblong-obovate to oblanceolate, 15-30 cm. long, 6-12 cm. broad; apex obtuse to rounded; base tapered, cuneate to rounded or subcordate; upper surface very slightly rugulose, dark green, ultimately glabrous and often smooth and shiny, midrib and primary veins impressed; under surface clothed with a buff to rusty-brown tomentum, midrib prominent, primary veins raised, veinlets obscure; petiole 2·5-4 cm. long, cylindric, not grooved.

INFLORESCENCE: a corymb of 12-15 flowers; rhachis 1·5-2 cm. long.

PEDICELS: 3 cm. long, greenish or pink tinted with white to fawn-tomentum.

CALYX: 1-2 mm. long, a thickened rim with 7-8 short, undulate teeth, tomentose.

COROLLA: oblique-campanulate, 3-4 cm. long, 6·5 cm. across, white, creamy-white or tinted rose with deep crimson basal blotch and radiating spots; lobes 7-8, undulate and emarginate.

STAMENS: 14-16, 1·5-3·5 cm. long; filaments puberulous at base.

PISTIL: 3-4·5 cm. long; ovary 1 cm. long, densely tomentose with fasciate hairs, 7-9-chambered; style glabrous, sharply curved at tip; stigma discoid, pinkish.

CAPSULE: about 3 cm. long, 7 mm. broad, distinctly ribbed.

HABITAT: Yunnan; from Lankong, north and north-west to the Chungtien and the Muli Mountains in South-Western Szechuan and north-west to the Mekong Salween Divide. In corries on hillsides and the edge of pine forests at 10,000-13,000 ft. altitude.

The most widely distributed Chinese species of the series. Herbarium specimens vary much in leaf size and leaf form. In the type locality (Hoching and Lankong Passes) the leaves are oblong to almost elliptic. Gatherings from the north-east have oblanceolate leaves, while those from the north-west are relatively small and narrow. In this country *R. fictolacteum* in most areas is one of the hardiest of the series.

RHODODENDRON GALACTINUM, *Balf. f. MS.* (descript. *Tagg*) in *Notes R.B.G. Edin.*, vol. 15 (1926), 103.

Illustration—Millais, *Rhododendrons*, 2nd ser. (1924), 94.

Habit : a tree 15-22 ft. high ; shoots of the current year clothed at first with a grey detersile tomentum, later glabrous, green ; foliage-bud oblong, ovoid, densely fawn-tomentose, outer scales rounded or broadly acuminate and fringed at the margin.

Leaves : lamina oblong-ovate to lanceolate or oblanceolate, 12-21 cm. long, 5-8 cm. broad ; apex acuminate or obtuse ; base broadly cuneate or rounded ; upper surface dark green, glabrous and minutely rugulose, midrib grooved, yellowish ; under surface buff-grey or pale cinnamon, clothed with a velvety indumentum, midrib and primary veins prominently raised ; petiole 3·5 cm. long, cylindric, slightly grooved above near lamina base.

Inflorescence : a racemose umbel of about 15 flowers ; rhachis 1 cm. long.

Pedicels : 2·5 cm. long, pale green or faintly tinged pink, clothed with thin whitish tomentum.

Calyx : short, with 7 triangular teeth about 1 mm. long, floccose.

Corolla : bell-shaped, about 3 cm. long, pale rose with deep crimson blotches within at base, which break into lines and spots ; lobes 7.

Stamens : 14, 1·2-2 cm. long ; filaments white pubescent at base.

Pistil : about 3 cm. long, equalling corolla ; ovary conoid, green, glabrous, 10-chambered ; style glabrous ; stigma discoid and greenish, small for the series.

Capsule :

Habitat : Szechuan.

Wilson obtained this species in fruit only, but from seed gathered by him many plants have been raised in this country. *R. galactinum* is a Szechuan outlier of the series ; it is the only member with a glabrous ovary. Plants in cultivation may be distinguished by the terminal foliage-buds ; these are blunt and lack the long pointed outer scales characteristic of other species of the series. In leaf shape and colour of indumentum it can be confused with *R. coriaceum*, but the foliage-bud affords a ready mark for distinguishing it.

RHODODENDRON HODGSONII, *Hook. f.* in *Rhodo. Sikkim Himal.* (1851), 16.

Illustrations—Hook. f. in *Rhodo. Sikkim Himal.* (1849), t. 15; *Bot. Mag.*, vol. 92 (1866), t. 5552.

Habit: a rounded shrub or small tree of 12-20 ft. branching from the base; shoots stout, clothed with a greyish felted tomentum; foliage-buds conical, the outer scales broadly ovate at base, tapering to long acuminate tips.

Leaves: lamina oblong-elliptic to broadly oblong-oblanceolate, 18-30 cm. long, 7-12 cm. broad; apex obtuse to rounded, sometimes emarginate; base obtuse to rounded; upper surface dark mat green, slightly rugulose, midrib and primary veins impressed; under surface clothed with a smooth grey or buff indumentum, midrib prominent, greenish, glabrescent, primary veins slightly raised; petiole about 5 cm. long, almost cylindric, convex above, not grooved, grey-green with a thin indumentum.

Inflorescence: a compact rounded umbel of 15-20 flowers; rhachis 5 cm. long.

Pedicels: 3-4 cm. long, stout, densely tomentose.

Calyx: a short fleshy cup with 7 triangular teeth.

Corolla: tubular-campanulate, fleshy, 3-4 cm. long, at opening of flower a dark magenta-purple fading with expansion of corolla to a paler and duller tint of magenta-lilac, usually with a few small darker basal blotches within; lobes 7-8, rarely as few as 6 or as many as 10.

Stamens: 15-18 (usually 16), about 2·5-3 cm. long; filaments glabrous.

Pistil: about 3·3 cm. long, ovary oblong-conoid, 7 mm. long, narrow for the series, tomentose with fasciate hairs, 9-12-chambered; style glabrous.

Capsule: 4 cm. long, 7-8 mm. broad, fulvous tomentose; for the series a narrow type like *R. coriaceum*.

Habitat: Himalaya; from Nepal to Bhutan. On rocky spurs and in valleys at 10,000-12,000 ft. altitude.

R. Hodgsonii is one of the best known species of the series in cultivation. The leaf upper surface is distinctive. The expanding leaf has a thin white covering on the upper side. As the leaf matures this gives place to persistent vestiges which simulate the appearance of small mica-like spots on the dull, mat green surface. The leaf under surface is grey to fawn and in cultivation sometimes darker, approaching the rusty tint of that of *R. Falconeri*. The veinlets are not, however, conspicuous as in *R. Falconeri*.

RHODODENDRON LANIGERUM, *Tagg, sp. nov.*

Illustration—

Habit : a small gnarled tree ; branches below inflorescences very stout, as much as 1 cm. or more in diameter.

Leaves : lamina oblong-lanceolate or oblong-oblanceolate, 18-22 cm. long, 5-7 cm. broad ; apex acuminate, cuspidate ; margin entire ; base obtuse to cuneate ; upper surface slightly rugulose, at maturity glabrous except in the deeply grooved midrib which is lined with vestiges of a juvenile tomentum, primary veins 20-25 on each side deeply impressed ; under surface clad with a bistrate woolly felt at first white, turning grey, ultimately blackish, composed of an upper layer of long much-branched narrow funnel-shaped hairs over a thin under stratum of rosette hairs ; midrib very prominent, almost bare, primary veins raised and more or less clothed with indumentum like the rest of the leaf under surface ; petiole 1·5-2 cm. long, grooved above, rounded below, densely grey tomentose.

Inflorescence : a congested racemose truss of 20-25 flowers ; rhachis stout, about 2·5 cm. long, clad with a dense fawn or ferruginous tomentum ; bracts not seen ; bracteoles about 1 cm. long, filamentous, clothed with adpressed silky hairs.

Pedicels : stout, 1-1·5 cm. long, densely tomentose with greyish much-branched hairs.

Calyx : about 2 mm. long, fleshy with 5 triangular marginal teeth.

Corolla : broadly campanulate, 4-5 cm. long, rose-purple, tube fleshy with 5 marked basal nectar pouches ; lobes 5, 1·5 cm. long, 2 cm. broad, deeply notched.

Stamens : 10 (fide Ward).

Pistil : about 3 cm. long ; ovary conoid, grooved, clad with a dense fawn or greyish tomentum of fasciately branched hairs, 6-chambered, eglandular ; style glabrous ; stigma small.

Capsule :

Habitat : Assam ; Delei Valley. In middle and upper forests at 10,000-11,000 ft. altitude.

In its 5-partite corolla and its 10 stamens this is a distinctly aberrant member of the Falconeri series. In these characters, however, it is equally alien in the Grande series—the alliance suggested by Ward from the appearance of the plant in the field. The hairs of the leaf indumentum are not markedly cup-shaped but are long narrow funnels resembling those of *R. preptum*. The distinctly acuminate leaf apex is a characteristic feature which distinguishes it at once (flower characters apart) from *R. preptum* with its somewhat similar indumentum.

RHODODENDRON PREPTUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 12 (1920), 149.

Illustration—

Habit : a tree or shrub of 6-8 ft. with stout branches, densely tomentose ; foliage-bud conical.

Leaves : lamina elongated-obovate, about 16 cm. long, 7 cm. broad ; apex rounded with a prominent mucro ; base obtuse ; upper surface olive-green, glabrous, slightly rugulose ; under surface clad with a pale buff indumentum, midrib and primary veins raised ; petiole 2 cm. long, stout, slightly grooved.

Inflorescence : a racemose umbel of about 20 flowers ; rhachis 3·5 cm. long, tomentose.

Pedicels : not exceeding 2 cm. long, densely tomentose.

Calyx : small, saucer-shaped, densely tomentose with short marginal teeth.

Corolla : obliquely campanulate, 3·5 cm. long, probably creamy-white with deep basal crimson blotches.

Stamens : 16, much shorter than corolla ; filaments puberulous.

Pistil : 3 cm. long ; ovary conoid, truncate, grooved, densely tomentose with fasciate hairs, 10-13-chambered ; style glabrous with broad discoid lobulate stigma.

Capsule :

Habitat : North-Eastern Upper Burma ; N'Maikha—Salween Divide.

R. preptum is an imperfectly known plant, represented by dried specimens in fruit and a few withered flowers. It comes very near *R. arizelum* and may be but a form of that species. Seed was obtained under Forrest, No. 25064, and it may be possible later to appraise its distinctness.

RHODODENDRON REX, *Lévl.* in *Fedde. Rept.*, vol. 13 (1914), 340.

Illustration—

Habit : a tree 15-20 ft. high with very thick branches, flowering shoots 1·5 cm. in diameter, young shoots grey-white, tomentose.

Leaves : lamina oblanceolate, 25 cm. long, 8 cm. broad ; apex broadly obtuse ; base narrowed obtuse ; upper surface dark green, slightly rugulose ; under surface grey to pale buff with a more or less persistent indumentum, the upper stratum of bowl and bell-shaped cup-hairs giving a foveolate surface, primary veins raised ; petiole 4-4·5 cm. long, cylindric, not grooved above, clothed with a grey tomentum like that of the shoot.

Inflorescence : a large umbellate raceme of 20-30 flowers ; rhachis about 2 cm. long, tomentose.

Pedicels : 1·5-2 cm. long, tomentose.

Calyx : small, with 8 broadly triangular tomentose teeth.

Corolla : tubular-campanulate, 5 cm. long, rose-coloured with darker basal blotch and spots spreading upwards.

Stamens : 16, unequal, 2·5-4 cm. long ; filaments puberulous at base.

Pistil : 5 cm. long, equalling corolla ; ovary conoid, 1 cm. long, clothed with greyish fasciate hairs, 9-10-chambered ; style glabrous ; stigma small, 2 mm. across.

Capsule :

Habitat : North-Eastern Yunnan and South-Western Szechuan.

R. rex is the Chinese representative of the Himalayan *R. Hodgsonii*. It has characteristic thick flowering shoots, large trusses of rose-coloured flowers and large leaves. In indumentum features it is allied to *R. coriaceum* but it is a more robust plant.

RHODODENDRON SINO-FALCONERI, *Balf. f.* in *Notes R.B.G. Edin.*, vol. 9 (1916), 272.

Illustration—

Habit : a small tree of 20 ft. ; flowering shoot stout, at first clothed with a pale-yellowish tomentum, later glabrescent.

Leaves : lamina oblong-elliptic or elliptic, 20 cm. long, 12 cm. broad, broadest part slightly above the middle ; apex obtuse to rounded ; base obtusely rounded ; upper surface light green, at maturity glabrous, minutely rugulose, midrib and primary veins grooved ; under surface pale cinnamon clothed with a soft, spongy indumentum with a fine woolly surface, midrib and primary veins raised, more or less clothed with indumentum but not obscured by it ; petiole 3·5-4·5 cm. long, stout, cylindric, slightly grooved above, slightly winged.

Inflorescence : umbellate on a short rhachis.

Pedicels : 4 cm. long, pale cinnamon-tomentose.

Calyx : cup-shaped, densely tomentose, about 1 mm. long with triangular or rounded teeth.

Corolla : broadly campanulate, pouched at base, pale yellow, about 5 cm. long ; lobes 8, rounded, emarginate.

Stamens : 16, unequal, shorter than corolla, 2-3 cm. long ; filaments ciliate-puberulous at base.

Pistil : 4·5 cm. long ; ovary dense tomentose with fasciate hairs, 16-17-chambered ; style glabrous, the apex widened to a discoid stigma.

Capsule :

Habitat : Yunnan ; Mengtsz. In forests at 9000 ft. altitude.

This is not in cultivation. In general appearance it resembles *R. Falconeri* and *R. arizelum* but with broader and more elliptic leaves. Its indumental features are, however, quite distinct.

FERRUGINEUM SERIES

General Characters :—Small shrubs with short twiggy branchlets. Leaves evergreen, small, oblanceolate, densely scaly below. Inflorescence shortly racemose or subumbellate, several-flowered. Flowers small, pink or rarely white. Calyx obsolete or shortly lobed, scaly outside. Corolla tubular, 5-lobed, scaly or pubescent outside, softly pubescent inside. Stamens 10, not or only very slightly exserted, pubescent. Ovary 5-celled, densely scaly ; style short, included. Capsule very small.

Distribution :—Mountains of Southern Europe from th Pyrenees to Transylvania ; above 4000 ft.

A small and natural group confined to the Alps of Southern Europe. *R. hirsutum* favours calcareous soil. In its native habitats it hybridises freely with *R. ferrugineum*, the cross being *R. intermedium*, Tausch.

J. H.

KEY TO THE SPECIES

Leaves fringed with bristly hairs, laxly scaly below ; calyx-lobes about $\frac{1}{8}$ in. long ; stamens slightly exserted . . . **hirsutum.**

Leaves not fringed with hairs, densely scaly below ; calyx obsolete ; stamens not exserted :

Corolla-tube scaly but not pubescent outside ; scales on lower surface of leaves very dense and overlapping ; style longer than ovary . . . . . **ferrugineum.**

Corolla-tube softly pubescent outside ; scales on lower surface of leaves not or only just contiguous ; style shorter than ovary **Kotschyi.**

RHODODENDRON FERRUGINEUM, *Linn.*

A. Typical leaf showing lower surface. B. Scales from same. C. Stamen. D. Pistil. E. Fruit.

RHODODENDRON FERRUGINEUM, *Linn.*

Illustrations—Lodd. *Bot. Cab.*, t. 65 ; Sweet *Fl. Gard.* 2 : t. 258 (var. *album*) ; Reichb. *Ic. Fl. Germ.* 17 : t. 1158 (1855).

Habit : small shrub with rather leggy branches, densely scaly.

Leaves : oblanceolate, rounded to an obtuse mucronate apex, 1-1½ in. long, ⅓-½ in. broad, densely scaly on lower surface, scales reddish-brown, *overlapping* ; leaf-stalks ⅙ in. long.

Inflorescence : terminal, racemose, several-flowered ; flower-stalks ⅓ in. long, scaly.

Flowers : reddish-pink.

Calyx : very short, slightly lobed, scaly.

Corolla : tubular, *loosely scaly but not pubescent outside*, ¾ in. long, 5-lobed, pubescent inside.

Stamens : 10, slightly exserted, shortly pubescent in lower half.

Ovary : 5-celled, densely scaly ; style slightly longer than the ovary, glabrous.

Capsule : ¼ in. long, densely scaly.

Habitat : Alps of South Europe from the Pyrenees to the Austrian Alps.

Var. **album** with white flowers, occurs occasionally in a wild state.

RHODODENDRON HIRSUTUM, *Linn.*

Illustrations—*Bot. Mag.*, t. 1853 ; Lodd. *Bot. Cab.*, t. 479 ; Reichb. *Ic. Fl. Germ.* 17 : t. 1158 (1855).

Habit : small shrub with short twiggy branchlets.

Leaves : oblanceolate or elliptic-oblanceolate, rounded to an obtusely mucronate apex, $\frac{1}{2}$-1 in. long, about $\frac{1}{3}$ in. broad, *crenulate on the margins and fringed with bristly hairs,* laxly scaly below, the scales fleshy and about 2-3 times their own diameter apart ; leaf-stalks about $\frac{1}{8}$ in. long.

Inflorescence : terminal, shortly racemose, several-flowered ; flower-stalks $\frac{1}{2}$-$\frac{3}{4}$ in. long, laxly scaly.

Flowers : rose-pink to nearly scarlet.

Calyx : deeply 5-lobed, about $\frac{1}{8}$ in. long, lobes loosely covered with scales and *fringed with hairs.*

Corolla : tubular, 5-lobed, about $\frac{1}{2}$ in. long, loosely scaly outside, *lobes fringed with short hairs* ; tube softly pubescent inside.

Stamens : 10, slightly exserted, pubescent in the lower half.

Ovary : 5-celled, densely scaly ; *style shortly pubescent near the base,* $1\frac{1}{2}$ times as long as the ovary.

Capsule : ovoid, $\frac{1}{4}$ in. long, scaly.

Habitat : Alps of South Central Europe.

Var. **album** has white flowers and is occasionally found in a wild state ; a freakish form is var. *laciniatum,* with jagged leaves.

RHODODENDRON KOTSCHYI, *Simk.*

(R. MYRTIFOLIUM, *Schott and Kotschy,* not of *Lodd.*)

ILLUSTRATIONS—Stapf. in *Bot. Mag.,* t. 9132 (1927); Garden 56: 159 (1899); Reichb. *Ic. Fl. Germ.* 17: t. 1157 (1855).

HABIT: low shrub with twiggy branchlets.

LEAVES: oblanceolate, rounded at the apex, obtusely mucronate, about $\frac{1}{2}$ in. long and $\frac{1}{4}$ in. broad, *crenulate,* densely scaly below, scales about *half their own diameter apart* or subcontiguous.

INFLORESCENCE: terminal, subumbellate, few-flowered; flower-stalks $\frac{1}{2}$-$\frac{3}{4}$ in. long, loosely scaly.

FLOWERS: pink or very rarely white.

CALYX: very short, densely scaly outside.

COROLLA: tubular, *softly pubescent on both sides,* 5-lobed.

STAMENS: 10, slightly pubescent in lower half, *not exserted.*

OVARY: 5-celled, densely scaly; *style shorter than ovary,* glabrous.

CAPSULE: $\frac{1}{4}$ in. long, scaly.

HABITAT: Transylvanian Alps and Northern Bulgaria; 5000-7500 ft. alt. or more.

FORTUNEI SERIES

The majority of the members of this important series come from China. It is widely distributed in Szechuan and Yunnan, with extension into Kansu, Hupeh, Chekiang, Burma and the Eastern Himalaya. The chief centre is undoubtedly Szechuan, where occur all the members of the subseries Oreodoxa, Davidii, Calophytum and Orbiculare. The subseries Griffithianum with a single species is the only representative—and that an aberrant one—from the Himalaya. Burma is only concerned with *R. decorum* and some of its immediate allies.

The general characteristics of the series are as follows: glabrousness of mature foliage, oval to elliptic outline of the leaf, usually with well-rounded ends, though exceptions occur in the subseries Davidii and Calophytum, frequency of glands on the inflorescence, especially on the pedicels and often on the ovary, style and corolla but rarely on the leaves, large flowers usually funnel-campanulate, somewhat fleshy, calyx insignificant (except Griffithianum), corolla 6-7-partite, although pentamerous flowers sometimes occur, prevalence of white, pink or rose in flower-colour, absence of red and yellow, lack of conspicuous spotting, nectaries not prominent as in series Thomsonii and Arboreum, stamens 12-25, rarely 10, large stout fruits.

The only series which invites close comparison is Thomsonii, in which also the leaf is usually glabrous and usually has rounded ends. In Thomsonii, however, the leaf is generally broad for its length and the leaf-base is very often cordate; the glands, where present, are generally more prominent by reason of their longer stalks and occur not uncommonly on the foliage; the flower is pentamerous, the calyx often large and often coloured, the corolla often tubular, red and yellow colours are not infrequent, pouched nectaries are well developed and the fruit is decidedly smaller than that usually found in Fortunei.

More remote is the connection with Arboreum and Irroratum. Distinctions for these lie in the leaf-shape, the form of truss, the numerous subpersistent bracts, the pentamery, the tendency to red colour and prominence of pouched nectaries, and in the usually slenderer and more curved fruits. There is no real

kinship, but there is certainly a suggestion of resemblance between the foliage of members of the Oreodoxa subseries and that of certain species of the Neriiflorum Series such as *R. neriiflorum* itself.

The series is divided into six subseries. Two of these, Orbiculare and Griffithianum, are represented by single species and present no difficulty in discrimination. For the Series Fortunei the completely glandular style is diagnostic. A little more care is necessary to separate Oreodoxa from Davidii, but the combination of characters given in the key should leave little doubt.

R. auriculatum, which sometimes is included in the Fortunei Series, is so divergent that it is placed in a separate series along with *R. Griersonianum*.

KEY TO THE SUBSERIES

A. Style glandular to tip:
  B. Calyx minute . . . . . **Fortunei.**
  BB. Calyx large (1·5-2 cm.) . . . **Griffithianum.**
AA. Style glabrous or glandular at base only:
  B. Leaves orbicular . . . . . **Orbiculare.**
  BB. Leaves much longer than broad:
    C. Leaves small, 5-10 cm. long.
      Leaves more or less evenly elliptic.
      Leaves more or less rounded at both ends.
      Truss axis usually very short.
      Flowers 3-4 cm. long . . . . . **Oreodoxa.**
    CC. Leaves large, 10-30 cm. long.
      Leaves more or less oblanceolate.
      Leaves cuneate at base, often abruptly acuminate at apex.
      Truss axis usually elongate.
      Flower 4-7 cm. long:
      D. Corolla funnel-campanulate.
        Stamens 10-15.
        Style slender.
        Stigma capitate . . . . . **Davidii.**
      DD. Corolla campanulate, bulged at base.
        Stamens 15-25.
        Style stout.
        Stigma discoid . . . . **Calophytum.**

H. F. T.

FORTUNEI SERIES

SUBSERIES CALOPHYTUM

The two species associated together in this small subseries are characterised by the much elongated oblanceolate leaves gradually tapered to short flattened petioles, by the open bell-shaped corolla bulged at the base recalling the flower-shape of *R. grande*, by the stout style ending in a broad discoid stigma and by the relatively large number of stamens and carpels. Both are Szechuan species. *R. calophytum* is in cultivation and is a sturdy shrub, but in its wild state it is said to form a tree as much as 50 ft. high. *R. Openshawianum* is not in cultivation. It is certainly closely akin to *R. calophytum*, but the available material indicates that it is a less vigorous plant with smaller and narrower leaves and longer petioles. The type plant is in fruit only. Within the series, the subseries Calophytum comes near to the subseries Davidii, but is readily distinguished from that subseries by the characters given above.

KEY TO THE SPECIES

A. Leaves 20-30 cm. long, 4-8 cm. broad . **calophytum.**
AA. Leaves 10-15 cm. long, 2-3·5 cm. broad . **Openshawianum.**

RHODODENDRON CALOPHYTUM, *Franch.* in *Bull. Soc. Bot. France*, vol. 33 (1886), 230.

ILLUSTRATIONS—Millais, *Rhododendrons*, 2nd ser. (1924), 260; *Bot. Mag.*, vol. 153 (1927), t. 9173.

HABIT: in cultivation a shrub of 15 ft., in the wild state a tree up to 50 ft.; young shoots at first thinly whitish floccose, soon glabrescent; shoots below inflorescences as much as 1 cm. diameter or more; flowers April to May.

LEAVES: lamina leathery, oblong-ovate to oblong-oblanceolate or elongate-lanceolate, 20-30 cm. long, 4-8 cm. broad; apex abruptly acuminate and cuspidate, gradually narrowed to a cuneate base and prolonged on petiole; upper surface bright green (unfolding leaves whitish floccose, quickly glabrous), midrib grooved, prominent as a pale green line, primary veins about 20-23 on each side impressed; under surface pale green, at maturity glabrous, midrib very prominent, often retaining towards the base vestiges of a juvenile tomentum, primary veins and vein reticulations conspicuous; petiole about 2 cm. long, flat above, rounded beneath, often with a white vestigial tomentum.

INFLORESCENCE: a loose racemose truss of many flowers up to 30; rhachis 1·5-2·5 cm. long, clad with hair tufts.

PEDICELS: stout, elongate, 4-7 cm. long, glabrous, or with a sparse whitish tomentum.

CALYX: very small, disc-like, glabrous; lobes broadly ovate, inconspicuous.

COROLLA: openly campanulate, ventricose below, 5-6 cm. long, rosy-white to red or whitish-lilac with a dark basal blotch within and spotted on the posterior side; lobes 5-7, unequal, the posterior one largest, 2-2·5 cm. long, 3-3·5 cm. broad.

STAMENS: 15-20, unequal, 1·5-3 cm. long; filaments widened at base and there puberulous.

PISTIL: about 4·5 cm. long; ovary dome-shaped, 6 mm. long, glabrous; style stout, glabrous, widened below the large disc-like stigma, which is 8 mm. across.

CAPSULE: oblong-cylindric, somewhat ribbed, 14-16-chambered.

HABITAT: Western Szechuan, Mupin and Wa-shan. In woodlands at 7000-10,000 ft. altitude.

This species with its ally *R. Openshawianum* is very distinct in the series by reason of its corolla-shape, which recalls that of the members of the Grande series. Also worthy of note are the numerous stamens, the stout style, and the very broad stigma.

RHODODENDRON OPENSHAWIANUM, *Rehd. & Wils.* in *Plant. Wils.*, vol. 1 (1913), 543.

Illustration—

Habit : a shrub of about 18 ft., branches thick, clad at first with a greyish-floccose tomentum, when older pale brown ; buds ovate-obtuse.

Leaves : thinly leathery : lamina oblong-lanceolate to oblong-oblanceolate, 10-15 cm. long, 2-3·5 cm. broad ; apex acuminate, cuspidate ; base cuneate, slightly decurrent on petiole ; upper surface smooth, glabrous, midrib deeply grooved, primary veins 16-18 on each side deeply impressed ; under surface paler, glabrous, midrib prominent, primary veins distinct ; petiole about 1 cm. long, flat above, grooved, at first thinly floccose-tomentose, as is also the base of the midrib.

Inflorescence : a racemose umbel of about 8 flowers ; rhachis 1-1·5 cm. long, sparsely hairy.

Pedicels : stout, 3·5-4·5 cm. long, glabrous.

Calyx : small, 2 mm. long, a somewhat fleshy disc with undulate rim.

Corolla : obliquely campanulate, white blotched within at the base, 4-5 cm. long, slightly ventricose ; lobes 5, broadly rounded, 1·5 cm. long, 2 cm. broad, deeply emarginate.

Stamens : 20-25, unequal, 1·5-3 cm. long ; filaments slender, glabrous or very finely puberulous.

Pistil : about 3 cm. long ; ovary oblong-ovoid, 7 mm. long, glabrous ; style glabrous, thickened below the larger discoid stigma, which is 5 mm. across.

Capsule : oblong-ovoid, blunt, 2·5-3 cm. long, 1-1·3 cm. broad, glabrous, 15-chambered.

Habitat : Western Szechuan ; Yung -Ching Hsien, Wa-wu-shan. In woodlands at 7000-8000 ft. altitude.

This has smaller and narrower leaves than the allied *R. calophytum*. The original description was based on fruiting specimens. The account given above of the flower is taken from material in the Edinburgh herbarium attributed with but little doubt to this species. The material confirms the association with *R. calophytum*.

FORTUNEI SERIES

SUBSERIES DAVIDII

This subseries falls into two distinct groups which are not closely related one to another. *R. Davidii,* with its glandular ovary and much elongated rhachis, is somewhat aberrant. *R. sutchuenense* and its two allies form a fairly natural and homogeneous association. The subseries is one tending to the development of large but relatively narrow leaves and to the elongation of the inflorescence. It is separated from the subseries Fortunei by the different foliage and in particular by the glabrous style. From the subseries Oreodoxa the distinction lies in the leaf-characters and the elongate truss with larger flowers. From the allied subseries Calophytum it is readily distinguished by the flower shape. The distribution finds its centre in Szechuan with slight extensions into Hupeh.

KEY TO THE SPECIES

A. Ovary glandular . . . . . **Davidii.**
AA. Ovary glabrous :
  B. Midrib more or less hairy :
    C. Corolla 5-lobed, very densely puberulous inside, spotted or blotched . . . . . **sutchuenense.**
    CC. Corolla 6-7-lobed, glabrous inside, without spots or blotch . . . . . **planetum.**
  BB. Midrib glabrous . . . . . **praevernum.**

Rhododendron Davidii, *Franch.* (Copied from t. 11 in *Plant. David.*, vol. 2.)

A. Flowering shoot (about ⅔ natural size). B. Pistil. C. Stamen. B and C slightly enlarged.

RHODODENDRON DAVIDII, *Franch.* in *Bull. Soc. Bot. France*, vol. 33 (1886), 230.

Illustration—*Plant. David.*, vol. 2 (1888), pl. 11, in *Nouv. Arch. Mus. Paris*, ser. 2, vol. 10.

Habit: a tall shrub of 9-15 ft. with glabrous branches; flowers in April and May; shoots below inflorescences stout, 7 mm. diameter.

Leaves: lamina thickly leathery, narrowly oblong-lanceolate, oblong-oblanceolate, 10-17 cm. long, 3-4 cm. broad; apex acute or abruptly acuminate, more or less beaked; base cuneate; upper surface smooth, at maturity glabrous, midrib grooved, primary veins 12-15 on each side very slightly impressed; under surface paler, glabrous, midrib prominent, primary veins evident but not elevated; petiole about 2 cm. long, flattish above, rounded below, glabrescent.

Inflorescence: an elongate raceme of 8-12 flowers; rhachis 5-10 cm. long ("as much as 15 cm.," *Franch.*), glandular with almost sessile ovoid glands.

Pedicels: about 1 cm. long, densely glandular with short-stalked glands.

Calyx: small, disc-like, with short broadly rounded lobes, densely glandular with short-stalked glands.

Corolla: openly campanulate, 5 cm. long, rosy-red or lilac coloured, spotted purple within on the upper petal, outside sparse glandular with short-stalked glands, inside glabrous; lobes 7-8, unequal, ovate to rounded, about 1·5 cm. long, 2 cm. broad, crenulate, only slightly emarginate.

Stamens: 14-16, 2·5-4 cm. long; filaments slender, glabrous.

Pistil: 5 cm. long; ovary conoid, 5 mm. long, densely glandular with stalked glands, 7-chambered; style slender, glabrous, or with a few glands at the very base; stigma small, lobulate.

Capsule:

Habitat: Western Szechuan; Mupin, and south-east of Tatsienlu. In woodlands at 10,000 ft. altitude.

This species is readily distinguished in the subseries by the glandular ovary. From *R. oreodoxa* and its allies it differs in the leaf-shape and in the elongate inflorescence. The true plant is probably not in cultivation.

RHODODENDRON PLANETUM, *Balf. f.* in *Notes R.B.G. Edin.*, vol. 12 (1920), 145.

ILLUSTRATION—*Bot. Mag.*, vol. 148 (1922), t. 8953.

HABIT : a shrub of 4-12 ft. with stout branches, those a year old as much as 7 mm. diameter, at first more or less clad with a white detersile indumentum, later glabrous, green ; flowers February and March.

LEAVES : lamina leathery, oblong or elongate-oblong, 10-20 cm. long, 3-6 cm. broad ; apex obtuse or subacute ; base cuneate ; upper surface bright green, smooth, glabrous, midrib narrowly grooved with vestiges of floccose hairs in the groove, primary veins about 20 on each side, slightly grooved ; under surface pale green, sprinkled with vestiges of a detersile floccose indumentum particularly near the midrib and on the veins, midrib prominent, more or less floccose and sparsely glandular, primary veins slightly raised ; petiole about 2 cm. long, flattish above, distinctly winged and grooved, at first clad like the stem, finally glabrescent.

INFLORESCENCE : a terminal umbel of 10 flowers ; rhachis stout, about 7 mm. long, somewhat tomentose.

PEDICELS : about 2 cm. long, green, glandular.

CALYX : small, about 1 mm. long ; lobes 5, glabrous or with a few glands.

COROLLA : funnel-campanulate, 4-5 cm. long, pink without blotch or spots, fleshy, glabrous inside and outside ; lobes 6-7, rounded, emarginate, 1-2 cm. long, 1·5-2 cm. broad.

STAMENS : 12-14, unequal, 1·7-3 cm. long ; filaments puberulous at base, anthers dark purple.

PISTIL : shorter than corolla, 3·5 cm. long ; ovary dome-shaped, 5 mm. long, slightly grooved, glabrous ; style glabrous, pink tinted, slightly swollen below the broad discoid stigma.

CAPSULE : oblong-cylindric, blunt, oblique to pedicel, 2·5-3 cm. long, 1 cm. broad, distinctly ribbed, glabrous, brownish, 12-chambered.

HABITAT : Szechuan.

Allied undoubtedly to *R. sutchuenense* and *R. calophytum*, but the corolla lacks both spots and blotch and is of a different shape. The description is based on cultivated specimens raised from seed collected by Wilson. No dried material from China is known.

RHODODENDRON PRAEVERNUM, *Hutch.* in *Gard. Chron.*, 3rd series, vol. 67 (1920), 127.

Illustration—*Gard. Chron.*, 3rd series, vol. 73 (1923), 159.

Habit : a medium-sized compact shrub ; young stems at first thinly greyish floccose, older branchlets green, glabrous, those below inflorescences about 6 mm. diameter ; flowers in March.

Leaves : lamina leathery, elliptic-oblanceolate, 10-18 cm. long, 2·5-6 cm. broad ; apex somewhat gradually acute ; narrowed to a cuneate base ; upper surface dark green, dull mat, at maturity glabrous, midrib grooved, primary veins 14-20 on each side very slightly impressed ; under surface pale grey-green, glabrous, midrib prominent, glabrous, primary veins and vein reticulations conspicuous ; petiole 1·5-2·5 cm. long, flattish above, rounded below, at first thinly floccose like young stems, finally glabrous.

Inflorescence : a terminal umbel of about 10 flowers ; rhachis 1 cm. long, sparsely floccose.

Pedicels : stout, 2 cm. long, glabrous.

Calyx : minute, lobes 5, broadly triangular, about 2 mm. long, glabrous.

Corolla : campanulate, 5-6 cm. long, white or white-suffused rose with a large dark wine-red blotch at the base and smaller spots above, 5-pouched at base, glabrous outside, puberulous within at base ; lobes 5, deeply emarginate, 2 cm. long, 3 cm. broad.

Stamens : 15, 3-4·5 cm. long ; filaments densely puberulous for one-third their length.

Pistil : 4-4·5 cm. long ; ovary 5 mm. long, conoid, blunt, glabrous ; style glabrous ; stigma lobulate about 2 mm. across.

Capsule : woody, oblique at base, 4 cm. long, 10-12-chambered ; style persistent.

Habitat : Hupeh. In woods at 5000-7000 ft. altitude.

Closely akin to *R. sutchuenense*, but can be distinguished by the glabrous midrib. The corolla has a lighter colour and is marked by a blotch resembling that of *R. sutchuenense*, var. *Geraldii*.

RHODODENDRON SUTCHUENENSE, *Franch.* in *Journ. de Bot.*, vol. 9 (1895), 392.

Illustration—*Bot. Mag.*, vol. 137 (1911), t. 8362.

Habit : a shrub of 3-10 ft., in the wild much taller, forming a tree ; young shoots stout, at first clad with a thin white to grey tomentum, finally glabrescent ; shoots below inflorescences as much as 1 cm. across ; flowers March.

Leaves : lamina oblong-oblanceolate or narrowly oblong-oval, 9-25 cm. long, 3-7 cm. broad ; apex broadly obtuse or semi-rounded, narrowed from the broadest part to a cuneate or obtusely rounded base ; upper surface dark green, mat, at maturity glabrous, midrib grooved a light green line, primary veins 17-22 on each side impressed ; under surface pale, at maturity glabrous except on the very prominent midrib, which commonly retains a loose, somewhat woolly tomentum, primary veins and vein reticulations conspicuous ; petiole stout, 1·5-3 cm. long, flattish above, rounded below, at first more or less tomentose, becoming glabrescent.

Inflorescence : a dense corymbose raceme of 8-10 flowers ; rhachis 1·5-2·5 cm. long, glabrous.

Pedicels : stout, 1·5-2·5 cm. long, sparsely floccose.

Calyx : small, disc-like, undulately 5-lobed, glabrous or sparsely floccose.

Corolla : widely campanulate, 5-7·5 cm. long, rose-pink, spotted deeper rose within, not blotched at base, densely puberulous within ; lobes 5, rarely 6, unequal, 2-2·5 cm. long, 3-4 cm. broad, deeply notched.

Stamens : 13-15, unequal, 3-4·5 cm. long ; filaments white, distinctly hairy at base, anthers nearly black.

Pistil : 5·5-7 cm. long ; ovary conoid, 7 mm. long, glabrous, 12-chambered ; style glabrous ; stigma knob-like, reddish.

Capsule : woody, oblong, about 3·5 cm. long and 1 cm. broad, distinctly ribbed.

Habitat : Szechuan and Hupeh. In woodlands at about 5000-8000 ft. altitude.

An ally of *R. calophytum*, but markedly distinct in foliage, in corolla shape, in the shorter pedicels, in the less numerous stamens and in the smaller knob-like stigma. It has a variety, var. *Geraldii*, which differs chiefly in the presence of a conspicuous basal blotch on the corolla.

FORTUNEI SERIES

SUBSERIES FORTUNEI

This is the chief subseries in Fortunei. In distribution it extends from Central China to the western provinces and just reaches Burma. In a general way the species have a more robust growth and larger, thicker leaves than those of the Oreodoxa subseries, while the leaves of the Davidii subseries are more elongated and pointed at the apex. The conclusive mark of the Fortunei subseries is the character of the style, which is invariably glandular from base to apex. In the other subseries (with the exception of the subseries Griffithianum, which is readily distinguished by its calyx) the style is glabrous or glandular at the base only. It falls readily into three groups, one centring round *R. Fortunei*, one round *R. decorum*, and one represented by *R. vernicosum* and its forms. *R. Hemsleyanum* is the only member which is somewhat aberrant in its aspect. *R. Fortunei* and its immediate allies are found in Central China and Szechuan, whereas *R. decorum* and its associates, along with *R. vernicosum*, are prevalent in Yunnan.

KEY TO THE SPECIES

A. Stamens pubescent. Stylar glands white to yellow:
  B. Corolla without blotch:
    C. Leaves 5-15 cm. long.
      Corolla 3-6 cm. long . . . . . **decorum.**
    CC. Leaves 10-30 cm. long.
      Corolla 6-12 cm. long . . . . . **diaprepes.**
  BB. Corolla with distinct blotch . . . **serotinum.**
AA. Stamens glabrous. Stylar glands white to yellow:
  B. Leaf-base more or less rounded . . . **Fortunei.**
  BB. Leaf-base deeply cordate . . . **Hemsleyanum.**
  BBB. Leaf-base more or less cuneate:
    C. Corolla bristly-glandular outside . . **glanduliferum.**
    CC. Corolla almost eglandular outside:
      D. Calyx lobes distinct, ciliate . . . . **discolor.**
      DD. Calyx lobes minute, not ciliate . . **Houlstonii.**
AAA. Stamens glabrous. Stylar glands red to purple-black **vernicosum.**

RHODODENDRON DECORUM, *Franch.* in *Bull. Soc. Bot. France*, vol. 33 (1886), p. 230.

(R. Franchetianum, *Lévl.*; R. hexamerum, *Hand.-Mazz.*; R. Giraudiasii, *Lévl.*; R. Spooneri, *Hemsl. & Wils.*)

Illustration—*Bot. Mag.*, vol. 142 (1916), t. 8659.

Habit: a somewhat straggling shrub of 6-20 ft.; young shoots stout, light green, at first clad with an evanescent glaucous bloom, later glabrous; flowers in May.

Leaves: lamina oblong, oblong-ovate to oblong-obovate, 5-15 cm. long, 3-7 cm. broad; apex blunt to rounded; base cuneate or obtuse, rarely subrounded, never cordulate; upper surface bright green, smooth, mat, wax-coated, becoming glossy when rubbed or heated, midrib a conspicuous bright green line, primary veins 12-16 on each side slightly elevated; under surface pale glaucous green, to the eye glabrous but under magnification punctulate with minute hairs, midrib prominent, lateral veins evident but not elevated; petiole about 2-3 cm. long, pale green, glabrous, convex above, hardly grooved.

Inflorescence: a lax racemose corymb of 8-10 flowers; rhachis about 3 cm. long, more or less glandular.

Pedicels: 3·5-4 cm. long, glandular with almost sessile glands.

Calyx: small (2 mm.); lobes 6-7, deltoid, glandular and gland-fringed.

Corolla: openly funnel-campanulate, variable in size, 3-5 cm. long, white to soft rose, with or without greenish or pinkish spots, glandular outside, distinctly hairy at the base of the tube within; lobes 6-8, rounded, emarginate, 1·5-2 cm. long, 2-2·5 cm. broad.

Stamens: 12-16, unequal, 2-3·5 cm. long; filaments puberulous at base.

Pistil: 4-5 cm. long; ovary 7 mm. long, oblong, densely clad with almost sessile glands; style glandular throughout with white or yellowish glands; stigma capitate.

Capsule: oblong, about 4 cm. long, 1·5 cm. broad, roughened with vestiges of glands, 8-10-chambered.

Habitat: Yunnan and Szechuan. In scrub on hillsides and in woodlands at 8000-11,000 ft. altitude.

This species finds its ally in *R. Fortunei*. Both have the style glandular to the top, but in *R. decorum* the filaments are very pubescent, not glabrous, as in *R. Fortunei*, and the leaf-base is less broad and rarely rounded. *R. decorum* is a species of wide distribution in Western China, while its ally occupies an area more to the East.

RHODODENDRON DIAPREPES, *Balf. f. & W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 10 (1917), 100.

(R. RASILE, *Balf. f. & W. W. Sm.*)

ILLUSTRATION—

HABIT: a shrub of 10-25 ft.; shoots of the current year glaucous green, glabrous, branches below inflorescences about 1 cm. diameter.

LEAVES: lamina oblong-elliptic to oblong-lanceolate or oblong-oblanceolate, 10-30 cm. long, 5-10 cm. broad; apex abruptly obtuse to subrounded; base rounded to cordulate; upper surface light green, smooth, glabrous, somewhat glossy, midrib grooved, a prominent light green line, primary veins 24 on each side very slightly impressed; under surface pale glaucous green, to the eye glabrous but under magnification punctulate with minute hairs, midrib very prominent, primary veins slightly raised, reticulations forming a darker green network; petiole stout, 2·5-4 cm. long, convex above, pale glaucous green, glabrous.

INFLORESCENCE: a loose racemose truss of 7-10 flowers; rhachis 1-3 cm. long, glandular.

PEDICELS: 3-4 cm. long, stout, more or less glandular.

CALYX: about 5 mm. long; lobes 5, broadly triangular, glandular and gland-fringed.

COROLLA: openly funnel-campanulate, as much as 10 cm. long, 13 cm. across, fleshy, white or very faintly flushed rose, outside glandular, inside puberulous at base and there somewhat greenish; lobes 7-8, 2-3 cm. long, 3-4 cm. broad, rounded, emarginate.

STAMENS: 18-20, 4-7 cm. long; filaments hairy at base.

PISTIL: 8-9 cm. long; ovary conoid, 10 mm. long, densely glandular with sessile glands; style clad throughout with white or yellowish glands; stigma knob-like.

CAPSULE: large, oblong-cylindric, as much as 6·5 cm. long, 1·5-2 cm. broad, distinctly ribbed, 10-12-chambered.

HABITAT: Western Yunnan and North-Eastern Upper Burma. In open situations and margins of forests at 10,000-11,000 ft. altitude.

This species may be regarded as a large-leaved and large-flowered expression of *R. decorum*. It is a native of the moister monsoon area of South-Western Yunnan and Burma, and its behaviour in cultivation as somewhat less hardy than *R. decorum* may thus find an explanation.

RHODODENDRON DISCOLOR, *Franch.* in *Journ. de Bot.*, vol. 9 (1895), 391.

(R. MANDARINORUM, *Diels*; R. KIRKII, *Hort.*)

ILLUSTRATION—*Bot. Mag.*, vol. 143 (1917), t. 8696.

HABIT: a robust shrub; in cultivation 4-6 ft., in the wild attaining 20 ft.; shoots stout, glabrous, those below inflorescences about 7 mm. diameter; flowers and new growths June and early July.

LEAVES: lamina leathery, oblong-elliptic to oblong-oblanceolate, 10-20 cm. long, 2·5-7 cm. broad, sometimes larger; apex obtuse; base narrow cuneate, at times slightly auricled; upper surface dark green, smooth, glabrous, midrib grooved, primary veins about 21 on each side slightly impressed; under surface pale, glabrous, midrib prominent, primary veins not elevated; petiole stout, 2-3·5 cm. long.

INFLORESCENCE: a loose truss of about 10 flowers; rhachis 3-5 cm. long, sparingly glandular.

PEDICELS: 3-5 cm. long, more or less glandular or practically glabrous.

CALYX: small but distinctly lobed, 3-5 mm. long; lobes undulate triangular or ovate, glandular, gland-fringed and ciliate with non-glandular hairs.

COROLLA: funnel-campanulate, about 5-8 cm. long, as much as 10 cm. across, pale pink or at first pink, becoming white, yellowish-green within the tube at base, sparse glandular or glabrous outside; lobes 7, rounded, emarginate, undulate, about 2 cm. long, 2·5 cm. broad.

STAMENS: 14-16, unequal, 3-4 cm. long; filaments glabrous.

PISTIL: about 5·5 cm. long; ovary ovoid-conoid, about 7 mm. long, densely glandular with white or yellowish glands; style glandular throughout; stigma large.

CAPSULE: oblong, slightly curved, distinctly ribbed, 4-5 cm. long, about 1·5 cm. broad, purplish, roughened with withered glands, 9-10-chambered.

HABITAT: Szechuan and Hupeh. In woodlands at 4000-7000 ft. altitude.

The nearest ally is *R. Fortunei*, from which it differs in the narrow leaf-base, the lateness of the flowering period, and in the more distinct calyx with ciliate lobes.

RHODODENDRON FORTUNEI, *Lindl.* in *Gard. Chron.* (1859), 868.

Illustration—*Bot. Mag.*, vol. 92 (1866), t. 5596.

Habit : a shrub of 10-12 ft. ; young shoots at first glandular, finally glabrous ; branches stout, pale green, those below inflorescences about 7 mm. diameter ; flowers in May.

Leaves : lamina oblong to oblong-elliptic, 7-17 cm. long, 3·5-8 cm. broad ; apex subrounded, obtuse or abruptly acute ; base rounded to truncate or cordulate ; upper surface dark green, mat, midrib deeply grooved, primary veins about 14-16 on each side impressed ; under surface pale glaucous green, to the eye glabrous, under magnification punctulate with minute glands or hairs, midrib prominent, primary veins and vein reticulations conspicuous ; petiole 2-3 cm. long, at maturity glabrous.

Inflorescence : a loose racemose umbel of 6-12 rather pendulous flowers ; rhachis 3-5 cm. long, more or less glandular.

Pedicels : 2-3 cm. long, densely glandular with almost sessile glands.

Calyx : small, with short lobes, glandular and gland-fringed.

Corolla : funnel-campanulate, 4-5 cm. long, 7-9 cm. across, pale rose ; outside glandular towards base ; lobes 7, rounded, somewhat undulate, about 2 cm. long, 2·5 cm. broad.

Stamens : 14, 2·5-3 cm. long ; filaments glabrous.

Pistil : about 3·5 cm. long ; ovary conoid, about 5 mm. long, densely glandular with almost sessile glands, 10-chambered ; style glandular throughout, widened below the largish knob-like stigma.

Capsule : oblong-ovoid, 2-3 cm. long, 1-1·5 cm. broad, slightly furrowed, roughened by withered glands.

Habitat : Chekiang. At 3000 ft. altitude.

R. Fortunei finds its nearest allies in *R. decorum* and *R. discolor*. Although introduced as long ago as 1855, the true plant is still rare in cultivation.

RHODODENDRON GLANDULIFERUM, *Franch.* in *Bull. Soc. Bot. France*, vol. 33 (1886), 231.

Illustration—

Habit : a shrub.

Leaves : lamina oblong-lanceolate to oblanceolate, about 15 cm. long, 3·5-4 cm. broad ; apex shortly acuminate, margin revolute ; base cuneate ; upper surface smooth, convex, at maturity glabrous, midrib deeply grooved, primary veins 17-20 on each side deeply impressed ; under surface pale, glabrous, midrib prominent, primary veins raised ; petiole stout, rounded, not grooved, about 2 cm. long.

Inflorescence : a loose umbel of 5-6 flowers ; rhachis about 2 cm. long, densely glandular with stalked glands.

Pedicels : about 2·5 cm. long, glandular with stalked glands.

Calyx : small with indistinct lobation, densely clad with glands like the pedicels.

Corolla : funnel-campanulate, white, 5-6 cm. long, densely clad on the outside almost all over with long-stalked glands ; lobes 7-8, rounded, emarginate, about 1·5 cm. long, 2 cm. broad.

Stamens : 14-16, unequal, 3-4·5 cm. long ; filaments glabrous ; anthers large, 4-5 mm. long.

Pistil : about 5 cm. long ; ovary conoid, densely clad with stalked glands ; style densely clad throughout with glands which are stalked at the base of the style but become sessile towards the stigma ; stigma large discoid, 4 mm. across.

Capsule :

Habitat : China, Yunnan.

This species is closely akin to *R. Fortunei* but is much more glandular. These glands are so elongated and so conspicuous on the outside of the corolla that they give it a characteristic bristly appearance. In its elongate leaf and relatively large stigma it appears to have some affinity also with *R. calophytum*, but differs in its glandular ovary and style.

RHODODENDRON HEMSLEYANUM, *Wils.* in *Kew Bull.* (1910), 109.

Illustration—

Habit: a bush about 18 ft. high; branches stout, glabrous, those below inflorescences about 1 cm. diameter.

Leaves: lamina very leathery, thick, oblong to oblong-ovate, 15-20 cm. long, 8-10 cm. broad; apex rounded; base deeply auricled-cordate; upper surface dark green, glabrous, somewhat shining, midrib grooved, primary veins about 17 on each side impressed; under surface pale, minutely papillate, midrib prominent, primary veins raised, ultimate reticulations conspicuous; petiole stout, 5 cm. long, glabrous.

Inflorescence: a racemose corymb of 10 or more flowers; rhachis thick, about 7 cm. long, glandular and sparsely hairy.

Pedicels: erect, spreading, 3-4 cm. long, glandular with long and short-stalked glands.

Calyx: very small, the undulate rim densely clad with long-stalked glands.

Corolla: widely campanulate, 5 cm. long, white, outside glandular, inside puberulous at base; lobes 7, broadly rounded, about 2 cm. long, 2 cm. broad.

Stamens: 10, included, about 3·5 cm. long; filaments slender, glabrous.

Pistil: 4·5 cm. long; ovary conoid, densely glandular, 7 mm. long; style glandular throughout, with stalked glands towards base and sessile glands below stigma; stigma subdiscoid, about 3 mm. across.

Capsule:

Habitat: Szechuan; Mount Omei.

This species is very distinct in its handsome foliage but is not in cultivation. The leaves recall those of *R. auriculatum*, but the lack of indumentum and the flower structure indicate clearly kinship with *R. Fortunei*.

RHODODENDRON HOULSTONII, *Hemsl. & Wils.* in *Kew Bull.* (1910), 110.

(R. Fortunei *var.* Houlstonii, *Rehd. & Wils.*)

Illustration—

Habit : a bush 6-12 ft. high ; flowering in the wild state in late April or early May.

Leaves : lamina oblong-oblanceolate, oblong-elliptic, 7-15 cm. long, 2·5-5 cm. broad ; apex rounded or obtuse, abruptly cuspidate ; base obtusely rounded to cuneate ; upper surface dark green, glabrous, midrib grooved, primary veins about 17 on each side slightly impressed ; under surface pale, glabrous, midrib prominent ; petiole purplish, 1·5-2·5 cm. long.

Inflorescence : a racemose umbel of 6-10 flowers ; rhachis 2-6 cm. long, glabrous.

Pedicels : 2-4 cm. long, sparsely or more densely glandular, glands often stalked.

Calyx : small, oblique, shortly toothed, sparsely glandular.

Corolla : funnel-campanulate, 4-6 cm. long, pink with a few faint lines of mixed green and dull crimson on the posterior side ; lobes 7, rounded or blunt.

Stamens : 14, unequal, 1·5-2·5 cm. long, shorter than corolla ; filaments glabrous.

Pistil : as long or nearly as long as corolla ; ovary ovoid, glandular, in some forms towards the top of the ovary somewhat hairy also ; style stout, sparsely glandular throughout.

Capsule : bluish-purple, cylindric, 2·5 cm. long, 7 mm. broad, 7-chambered.

Habitat : Hupeh and Eastern Szechuan. In mixed woods at about 4500-7000 ft. altitude.

This is regarded by some authorities as a variety of *R. Fortunei*, but its position seems to be somewhat intermediate between that species and *R. discolor*. It has the leaf-base of *R. discolor* and the calyx of *R. Fortunei*.

RHODODENDRON SEROTINUM, *Hutch.* in *Bot. Mag.*, vol. 146 (1920), t. 8841.

Illustration—*Bot. Mag.*, vol. 146 (1920), t. 8841.

Habit : a shrub of 10 ft. of straggling growth with long and lax branches ; young shoots green glabrous, older twigs yellowish brown ; flowers August to October.

Leaves : lamina oblong-elliptic, 9-16 cm. long, 4-7 cm. broad ; apex rounded, retusely mucronulate ; base slightly and unequally cordate ; upper surface dull green, at maturity glabrous, midrib slightly grooved, primary veins about 16 on each side slightly raised ; under surface pale glaucous green, to the eye glabrous, under magnification punctulate with minute hairs, midrib prominently raised, primary veins and vein reticulations conspicuous ; petiole 2-3·5 cm. long, glabrous.

Inflorescence : a racemose umbel of 7-8 flowers ; rhachis 2-3 cm. long, minutely glandular.

Pedicels : 3·5-4·5 cm. long, clad with small glands.

Calyx : small, undulately lobed ; clad with glands and gland-fringed.

Corolla : funnel-campanulate, about 6 cm. long, white, slightly flushed rose outside, blotched and tinged with red within and at the back of the tube more or less spotted, outside glandular, inside slightly puberulous ; lobes 7, rounded, notched, 1·5-2 cm. long, 2·5-3 cm. broad.

Stamens : 14-16, unequal, 3-4 cm. long ; filaments shortly pubescent at base.

Pistil : 5 cm. long ; ovary oblong-ovoid, 5 mm. long, clad with white shortly-stalked glands, 10-chambered ; style glandular to tip ; stigma pale green.

Capsule :

Habitat : China. Raised from seed collected by Delavay.

This is very closely akin to *R. decorum*, from which it deviates in the more straggling habit, very late period of flowering, in the more rounded or cordate base of the leaf blade, and in the corolla being blotched and more or less spotted with red inside at the base.

RHODODENDRON VERNICOSUM, *Franch.* in *Journ. de Bot.*, vol. 12 (1898), 258.

(R. ADOXUM, *Balf. f. & Forrest*; R. LUCIDUM, *Franch., non Nutt.*)

ILLUSTRATION—*Bot. Mag.*, vol. 146 (1920), t. 8834.

HABIT: a spreading shrub of 6-25 ft.; young shoots at first more or less glandular, later glabrous; shoots below inflorescences about 8 mm. diameter.

LEAVES: lamina thick, leathery, oblong-oval to oblong-elliptic, 6-12 cm. long, 3-5 cm. broad; apex broadly obtuse to rounded; base broadly and obtusely subrounded; upper surface smooth, glabrous, mat, but wax-covered and becoming glossy when rubbed or heated, midrib grooved, primary veins 14-16 on each side slightly impressed; under surface pale glaucous, to the eye glabrous but under magnification punctulate with minute hairs, midrib prominently raised, primary veins visible; petiole 1·5-3·5 cm. long, slightly grooved above, rounded below, at first more or less glandular.

INFLORESCENCE: a racemose umbel of about 10 flowers; rhachis about 1 cm. long, glandular and puberulous.

PEDICELS: 2-3 cm. long, clad with scattered short-stalked reddish glands.

CALYX: fleshy, an oblique expansion of pedicel; lobes 7, broadly rounded to triangular, about 1·5 mm. long, 2 mm. broad, densely glandular and gland-fringed.

COROLLA: widely funnel-campanulate, 4 cm. long, white to bright rose with or without crimson markings, glabrous inside and outside; lobes 7, broadly rounded, more or less emarginate, 1·8 cm. long, 2 cm. broad.

STAMENS: 14, unequal, 2-3 cm. long; filaments glabrous.

PISTIL: about 4 cm. long; ovary conoid, 5 mm. long, slightly grooved, 6-7-chambered, densely clad with short-stalked glands; style glandular throughout with dark-red glands; stigma lobulate.

CAPSULE:

HABITAT: Western Szechuan, Tatsienlu; Western Yunnan, Lichiang Range; North-Western Yunnan, Mekong-Salween Divide. In open thickets and open situations in forests at 9000-11,000 ft. altitude.

In this species the aspect of foliage and of flower strongly recalls *R. decorum*, but the dark-hued stylar glands are quite diagnostic. There are four geographical forms, viz.: *R. araliaeforme*, *R. euanthum*, *R. rhantum* and *R. Sheltonae*, which are hardly distinguishable from the type species.

RHODODENDRON GRIFFITHIANUM, *Wight* in *Ic. Plant. Ind. Orient.*, vol. 4 (1850), 6.

(R. Aucklandii, *Hook. f.*)

Illustrations —*Ic. Plant. Ind. Orient.*, vol. 4 (1850), t. 1203 (Griffithianum); *Rhodo. Sikkim Himal.* (1851), t. 11 (Aucklandii); *Bot. Mag.*, vol. 84 (1858), t. 5065 (Aucklandii).

Habit: in cultivation a shrub of 4-12 ft., often larger in the wild; young shoots stout, 5-7 mm. diameter, pale green, glabrous.

Leaves: lamina leathery, oblong to oblong-elliptic or oblong-ovate, 10-30 cm. long, 4-10 cm. broad; apex acute; base rounded to acute; upper surface smooth, glabrous, midrib grooved, primary veins 16-24 on each side distinct; under surface yellowish-green with a glaucous tint, glabrous, midrib prominently raised, primary veins raised; petiole 2·5-5 cm. long, rounded, hardly grooved, pale green, glabrous.

Inflorescence: a lax umbel of 3-5 flowers, rarely more; rhachis stout, as much as 8 cm. long, glabrous.

Pedicels: 3-5 cm. long, glabrous.

Calyx: saucer-shaped, 1-2 cm. long, 2-3·5 cm. across, greenish or pink-tinted, hardly lobed but with an irregular undulate rim, outside glossy, glabrous.

Corolla: widely campanulate, 3·5-7 cm. long, as much as 12-15 cm. across, white-tinged pink, or more rarely pure white or deeper tinted rose or yellowish; lobes 5, rounded, 2 cm. long, 3·5 cm. broad, crenulate, emarginate.

Stamens: 12-18, 2-3·5 cm. long; filaments glabrous.

Pistil: 4-5 cm. long; ovary ovoid, 7 mm. long, glaucous-green, glandular; style more or less glandular throughout with sessile glands, slightly curved below the very large greenish-yellow stigma.

Capsule: oblong-cylindric, purplish-brown, 3·5 cm. long, 1·5 cm. broad, roughened by withered glands, 10-chambered.

Habitat: Sikkim and Bhutan Himalaya. At 7000-9000 ft. altitude.

This Himalayan outlier has been placed in the Fortunei series, but it is not closely allied to any species in that series, consequently it is the sole member of its subseries. The large glabrous calyx is at once a diagnostic mark.

RHODODENDRON ORBICULARE, *Decaisne.* (Modified copy of t. 8775 in *Bot. Mag.*)

A. Flowering shoot (about $\frac{2}{3}$ natural size). B. Pistil. C. Section of ovary (enlarged). D. Stamens. E. Under surface of leaf apex showing venation. B and D slightly enlarged.

RHODODENDRON ORBICULARE, *Decaisne* in *Fl. des Serres*, vol. 22 (1877), 169.

(R. ROTUNDIFOLIUM, *David* in *Journ. As. Soc., N. China Branch*, vol. 7 (1873), 216 (*nomen nudum*).)

ILLUSTRATION—*Bot. Mag.*, vol. 144 (1918), t. 8775.

HABIT: a rounded much-branched bush with a good canopy of foliage; Decaisne says about 9 ft. high; the best *R. orbiculare* in cultivation is about 6 ft. high and over 13 ft. through; foliage shoots in first year stout, about 5-8 mm. diameter, bright green glaucous, to the eye glabrous, older wood in second year bright chestnut-brown, smooth and somewhat shining.

LEAVES: lamina broadly ovate to orbicular, 4-10 cm. long, 4-8 cm. broad; apex rounded with a short mucro; base cordate-auriculate with the lobes often overlapping; upper surface bright green, mat, glabrous at maturity, midrib very slightly grooved, a yellowish line, primary veins 10-14 on each side slightly impressed; under surface glaucous, papillate, to the eye glabrous but under magnification punctulate with minute hairs, midrib raised, vein reticulations conspicuous; petiole 3-5 cm. long, rounded, not grooved, light green or tinted reddish-purple, more or less glandular or almost eglandular.

INFLORESCENCE: a loose corymb of 7-10 flowers; rhachis 2-3 cm. long, more or less glandular.

PEDICELS: 4-6 cm. long, clad with a few glands chiefly at the base and with minute hair flecks more uniformly distributed.

CALYX: small, with a swollen basal part and narrow undulate rim, gland-fringed.

COROLLA: campanulate, rose, 3·5-4 cm. long; lobes 7, 1 cm. long, 1·5 cm. broad, imbricate, rounded, retuse.

STAMENS: 14, unequal, 1·5-2·5 cm. long; filaments white, glabrous.

PISTIL: 3-3·5 cm. long; ovary conoid, 8 mm. long, 7-chambered, clad with shortly-stalked whitish glands; style glabrous, pinkish; stigma small.

CAPSULE: cylindric, curved, 1·5-2 cm. long, dehiscing almost to the base into 7-8 narrow curved valves.

HABITAT: Western Szechuan; Mupin and Tatsienlu. In woodlands and thickets at 8000-10,000 ft. altitude.

This is an isolated species and its exact position is uncertain. In some respects, such as in foliage, it recalls the series Thomsonii, but the 7-partite flower, campanulate corolla, and lack of pouched nectaries scarcely accord with that series; still it may have some affinity with such members of the Thomsonii series as *R. Williamsianum*. It is placed in a distinct subseries of Fortunei as the sole representative.

FORTUNEI SERIES

SUBSERIES OREODOXA

The chief characteristics of this subseries are: a neat shrub habit with leaves of an elongate-oval or elliptic outline more or less rounded at both ends; an umbel of relatively few flowers, which are of moderate size compared with those of the other subseries. The glabrous style separates the members of the subseries from all the members of the Fortunei subseries. From the Davidii subseries it is readily distinguished by the foliage and by the smaller and fewer flowers on a shorter inflorescence axis. *R. oreodoxa* and *R. Fargesii* are somewhat alike in foliage but present a contrast as regards the occurrence of glands on the ovary. Taking the glabrous or glandular character of the ovary as a guide to kinship, *R. praeteritum* with a glabrous ovary is associated with *R. oreodoxa*, while *R. erubescens* with a glandular ovary is akin to *R. Fargesii*.

KEY TO THE SPECIES

A. Ovary glabrous:
  B. Pedicels glandular.
    Corolla 7-lobed . . . . . **oreodoxa.**
  BB. Pedicels floccose.
    Corolla 5-lobed . . . . . **praeteritum.**
AA. Ovary glandular:
  B. Filaments glabrous . . . . . **Fargesii.**
  BB. Filaments hairy . . . . . **erubescens.**

RHODODENDRON ERUBESCENS, *Hutch.* in *Bot. Mag.*, vol. 142 (1916), t. 8643.

Illustration—*Bot. Mag.*, vol. 142 (1916), t. 8643.

Habit: a shrub with rigid straight branches, those below inflorescences about 5 mm. diameter; bark purplish, smooth; flowers middle of April.

Leaves: lamina leathery, oblong-elliptic, 7-14 cm. long, 3-4 cm. broad; apex bluntly mucronate; base obtuse or subrounded; upper surface dark green, mat, midrib slightly grooved, primary veins about 12 on each side impressed; under surface pale yellowish-green, to the eye glabrous but under magnification clad with a thin sparse veil of small branched hairs, midrib raised and narrowed to leaf-tip, primary veins hardly raised; petiole about 2 cm. long, grooved above, glabrous.

Inflorescence: a terminal umbel of about 8 flowers; rhachis about 7 mm. long, densely glandular and tomentose.

Pedicels: 1 cm. long, densely glandular.

Calyx: small, about 2 mm. long; lobes 5, unequal, ovate-rounded, glandular and gland-fringed.

Corolla: campanulate, about 3·5-4 cm. long, white and finely puberulous within, rose-carmine outside; lobes 7, semi-orbicular, emarginate, 1 cm. long, 1-2 cm. broad.

Stamens: 12-14, 1-2 cm. long; filaments densely pubescent at base.

Pistil: 3·5-4 cm. long; ovary about 5 mm. long, clad with white-stalked glands, 6-chambered; style exserted, glabrous or with few glands at base; stigma pale yellow.

Capsule:

Habitat: China. Raised from seed collected by Mr. E. H. Wilson.

This species comes near to *R. Fargesii*, but the foliage is dissimilar and the stamens have hairy filaments.

RHODODENDRON FARGESII, *Franch.* in *Journ. de Bot.*, vol. 9 (1895), p. 390.

Illustration—*Bot. Mag.*, vol. 143 (1917), t. 8736.

Habit: a shrub of 3-18 ft.; branches moderately thick, glabrous, sometimes purplish, those below inflorescences about 4 mm. diameter.

Leaves: lamina leathery, elliptic to oblong-elliptic, 5-8 cm. long, 3·5-4·5 cm. broad; apex rounded, mucronate; base abruptly rounded, truncate to cordulate; upper surface dark green, at maturity glabrous, midrib a pale-green line, grooved, primary veins 9-10 on each side slightly raised; under surface pale, glaucous, at maturity glabrous but minutely punctulate, midrib slightly raised, primary veins fairly distinct as green lines; petiole 1·5-2·5 cm. long, glabrous, rather slender, often purplish.

Inflorescence: a racemose umbel of 6-10 flowers; rhachis 1 cm. long, densely glandular.

Pedicels: 1·5-2·5 cm. long, slender, densely glandular.

Calyx: about 1 mm. long, an undulate rim, glandular.

Corolla: openly campanulate, 4 cm. long, white to deep rose, spotted red, glabrous outside and inside; lobes 5-7, 1·5 cm. long, 2 cm. broad, emarginate, rounded.

Stamens: 14, 2-3·5 cm. long; filaments glabrous.

Pistil: 4 cm. long; ovary conoid, blunt, 5 mm. long, densely glandular, grooved; style glabrous; stigma small, lobulate.

Capsule:

Habitat: Szechuan and Hupeh. In woodlands at 7000-10,000 ft. altitude.

Of near relationship to *R. oreodoxa* but with a distinctly glandular ovary. The leaves are usually broader for their length than in its ally.

Rhododendron haematocheilum, *Craib.* (Copied from t. 8518 in *Bot. Mag.*)

A. Flowering shoot (about ⅔ natural size). B. Pistil. C and D. Stamens. B, C and D slightly enlarged.

RHODODENDRON OREODOXA, *Franch.* in *Bull. Soc. Bot. France*, vol. 33 (1886), 230.

Illustrations –*Gard. Chron.*, vol. 71, 3rd ser. (1922), 239, fig. 130; *Bot. Mag.*, vol. 139 (1913), t. 8518 (*R. haematocheilum*).

Habit: a shrub or small tree; young shoots clad with a thin white to greyish tomentum, quickly glabrescent; branches below inflorescences about 4 mm. diameter.

Leaves: lamina somewhat leathery, narrowly elliptic or oblanceolate-elliptic, 5-10 cm. long, 2-3·5 cm. broad; apex shortly obtuse to rounded; base obtuse to somewhat rounded; upper surface at maturity smooth, glabrous (unfolding leaf flecked above with whitish-floccose hairs), midrib grooved, primary veins 13-15 on each side; under surface pale, glaucous, epidermis papillate, to the eye glabrous but under magnification flecked with vestigial hairs of a juvenile indumentum, midrib prominent, primary veins slightly raised; petiole 1-2 cm. long, distinctly grooved, glabrescent.

Inflorescence: a racemose umbel of 10-12 flowers; rhachis short, about 5 mm. long, glandular and tomentose.

Pedicels: short, 5-7 mm. long, densely or sparsely glandular or almost glabrous.

Calyx: very short, 2-3 mm. long; lobes shortly and broadly triangular or ovate, more or less glandular.

Corolla: openly campanulate, 4 cm. long, pale rose with or without purple spots; lobes 7-8, broadly rounded, 1 cm. or less long, 1·3 cm. broad, blunt, emarginate.

Stamens: 14, unequal, 2·5-3·5 cm. long; filaments finely puberulous at base or glabrous.

Pistil: about 3·5 cm. long; ovary conoid, grooved, 6 mm. long, glabrous; style glabrous, stigma small.

Capsule: oblong-cylindric, about 2 cm. long, 7 mm. broad, distinctly ribbed, blackish, glabrous, 6-7-chambered.

Habitat: Western Szechuan, Mupin; Kansu. In woodlands at 7000-10,000 ft. altitude.

R. oreodoxa and its immediate allies are distinguished from the members of the Davidii subseries by their neater habit, smaller and more oval leaves, and by their umbellate few-flowered inflorescence. Widely spread in Szechuan and Kansu, it includes within it as geographical forms *R. haematocheilum*, Craib, *R. Limprichtii*, Diels, and *R. Reginaldii*, Balf. f., which are scarcely to be distinguished from the typical plant.

RHODODENDRON PRAETERITUM, *Hutch.* in *Gard. Chron.*, vol. 71, 3rd ser. (1922), 149.

Illustrations—*Gard. Chron.*, vol. 71, 3rd ser. (1922), f. 73; vol. 73, 3rd ser. (1923), f. 67.

Habit: a shrub; branches a year old sparsely and finely pubescent, bright green and shining; older branches reddish-brown, those below inflorescences about 4 mm. diameter; flowering at end of February and in March.

Leaves: lamina oval-oblong or oblong-elliptic, 4·5-9·5 cm. long, 2-4 cm. broad; apex rounded and obtusely mucronulate; base rounded to truncate; upper surface dull dark green, at maturity glabrous and minutely rugulose, midrib grooved, primary veins 12-16 on each side slightly impressed; under surface pale green, glabrous at maturity except for a loose sparse hairiness on the prominent midrib and in its vicinity, primary veins slightly raised; petiole 1·5-2 cm. long, rounded below, narrowly grooved above, at first floccosely pubescent, later glabrous.

Inflorescence: a short racemose umbel of 7-10 flowers; rhachis 1·5 cm. long, pubescent.

Pedicels: unequal, 1-2 cm. long, reddish, clad at first with a few scattered white-floccose hairs.

Calyx: small, about 2 mm. long, shallowly lobed; lobes 5, triangular-ovate, slightly hairy on the margin.

Corolla: widely campanulate, 3-4 cm. long, pink or white-flushed pink outside, spotted inside on back with a few carmine dots, not blotched at the base, 5-pouched at base; lobes 5, 1·5 cm. long, 2·5 cm. broad, deeply emarginate.

Stamens: 10, 2-3·5 cm. long; filaments slightly and sparsely pubescent at base; anthers chocolate-purple.

Pistil: 3-3·5 cm. long; ovary conoid, 7 mm. long, glabrous, 6-chambered; style glabrous, slightly curved; stigma small, pale yellow.

Capsule:

Habitat: China, Western Hupeh.

This is a close ally of *R. orcodoxa* and, like it, has a glabrous ovary. It differs in having a 5-lobed corolla and in its pedicels being eglandular.

FULVUM SERIES

This series is represented by five species. In its geographical distribution it is confined to Western Yunnan and the adjoining part of South-Eastern Tibet and Burma. While association with the Arboreum and Lacteum series is suggested by their general appearance, the species of this series are at once distinguished by the narrowly elongate glabrous ovary which develops into a sickle-shaped fruit. The following subordinate characters may be noted : the long narrow oblanceolate or obovate leaves, the open trusses and the long thin pedicels. The indumentum varies. In *R. fulvum* and *R. fulvoides* it is of so peculiar a nature as to be quite distinctive for these two species ; in *R. uvarifolium* and *R. niphargum* it recalls that of *R. argyrophyllum* ; in *R dendritrichum* it suggests that of *R. adenopodum.*

KEY TO THE SPECIES

A. Leaf indumentum ochraceous to fulvous, suède-like with finely granular surface. Midrib more or less clad with indumentum :
  B. Leaves obovate to broadly oblanceolate. Indumentum pale or deep cinnamon. Ovary 8-10-chambered **fulvum.**
  BB. Leaves elongate oblanceolate. Indumentum ochraceous to buff. Ovary 5-6-chambered . . . **fulvoides.**
AA. Leaf indumentum white, thin, smooth not granular. Midrib bare :
  B. Leaf narrowly oblanceolate . . . **uvarifolium.**
  BB. Leaf broadly oblanceolate . . . **niphargum.**
AAA. Leaf indumentum buff or tawny, paling on old leaves to grey, woolly, not granular. Midrib more or less clad with indumentum . . . . **dendritrichum.**

H. F. T.

RHODODENDRON DENDRITRICHUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 12 (1920), 103.

Illustration—

Habit : a shrub of 12-15 ft. with stout branches, those a year old about 4 mm. in diameter, clad with thin ash-grey indumentum of branched hairs.

Leaves : lamina leathery, oblanceolate, 10-16 cm. long, 3-4·5 cm. broad ; apex obtuse, somewhat beaked, with a short apiculus, often curved ; base tapered cuneate ; upper surface at maturity glabrous, midrib deeply grooved, primary veins 20 or more on each side slightly grooved ; under surface buff, becoming paler on old leaves, clad with a bistrate indumentum, the upper stratum loosely woolly, the under stratum a thin whitish pellicle which becomes evident when the upper stratum is rubbed off, midrib raised and more or less clad with indumentum, primary veins at first obscured by indumentum, more evident on older leaves ; petiole stout, 2 cm. long, clad like the young stems.

Inflorescence : a short racemose umbel of 10-15 flowers ; rhachis about 1 cm. long, glabrous, or with vestiges of short floccose hairs.

Pedicels : slender, erect, 2-2·5 cm. long, sparingly floccose.

Calyx : minute, about 1 mm. long, glabrous, with 5 minute teeth.

Corolla : funnel-campanulate, 3·5 cm. long, white faintly flushed rose, marked with crimson spots and blotched crimson at the base ; lobes 5, about 7 mm. long, 1·5 cm. broad, rounded, emarginate.

Stamens : 10, unequal, 1·8-2·8 cm. long ; filaments minutely puberulous at base.

Pistil : about 3 cm. long ; ovary thin, cylindric, 6 mm. long, slightly grooved, glabrous or minutely pubescent, 8-chambered ; style glabrous, expanding below the discoid lobulate stigma.

Capsule :

Habitat : North-Western Yunnan ; Mekong—Salween Divide. In pine and rhododendron forests at 12,000-13,000 ft. altitude.

This stands by itself in this small series, differing from the other four in the character of its woolly indumentum, while unmistakably in correspondence with them as regards flowers and fruit.

RHODODENDRON FULVOIDES, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 12 (1920), 112.

Illustration—

Habit : a shrub of 8-20 ft. ; one-year-old branches as much as 7 mm. in diameter, clad with a scurfy brown detersile indumentum, older shoots nearly bare.

Leaves : lamina thick, leathery, oblanceolate or elongated-obovate, 10-20 cm. long, 3-6 cm. broad ; apex obtuse or subacute or shortly acuminate ; base obtuse or wedge-shaped ; upper surface glabrous except for traces of a juvenile tomentum, midrib and primary veins grooved ; under surface clad with a coarse granular buff to tawny indumentum, midrib raised, clad like the rest of surface, primary veins about 12 on each side, almost hidden by indumentum ; petiole stout, grooved, about 1-2 cm. long, at first clad like the young stems.

Inflorescence : a racemose umbel of 20 flowers ; rhachis 1·5 cm. long, glabrous or slightly floccose.

Pedicels : 2-3 cm. long, glabrous or slightly floccose.

Calyx : saucer-shaped, small, 1·5 mm. long, glabrous, with 5 obscure lobes.

Corolla : campanulate, 3 cm. long, white or white flushed rose with a crimson basal blotch and a few spots or lines spreading from it ; lobes 5, broad, emarginate.

Stamens : 10, unequal, 1·3-2·3 cm. long ; filaments clad at base with short vesicular hairs.

Pistil : 2·5-3 cm. long ; ovary conoid, thin, tapered, 7 mm. long, slightly grooved, glabrous, 5-6-chambered ; style glabrous, slightly expanded below the small stigma.

Capsule : sickle-shaped, long and thin, 3·5 cm. long, 4 mm. in diameter, grooved, glabrous.

Habitat : North-Western Yunnan ; Mekong—Salween Divide ; Mekong—Yangtze Divide ; South-Eastern Tibet ; Tsarong. In pine and rhododendron thickets and forests at 12,000-13,000 ft. altitude.

This species is very near indeed to *R. fulvum*. It may be regarded as the northern representative of *R. fulvum*, which last is a plant of the Shweli—Salween area. The granular leaf indumentum is coarser than that of its ally, often becoming almost scurfy. It is commonly also of a lighter ochraceous tint.

RHODODENDRON FULVUM, *Balf. f. & W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 10 (1917), 110.

Illustration—

Habit : a small straggling tree, branched from the base, 9-18 ft. high, branches thick, fulvous or greyish tomentose, about 7 mm. diameter below inflorescences.

Leaves : lamina leathery, obovate to broadly oblanceolate, 12-17 cm. long, 4-6 cm. broad ; apex obtuse or shortly acuminate ; base obtuse or slightly rounded ; upper surface glabrous, except for traces of a juvenile tomentum, midrib and primary veins grooved ; under surface pale fawn to deep cinnamon, clothed with a soft suede-like indumentum of mop-like hairs, the surface finely granular, midrib prominent, primary veins 13-15 on each side more or less obscured by indumentum ; petiole 2-2·5 cm. long, grooved above, at first clothed with indumentum like that of the young stem.

Inflorescence : umbellate, a loose rounded truss of about 20 flowers ; rhachis about 1 cm. long, slightly floccose.

Pedicels : 2 cm. long, thin, more or less floccose-pubescent.

Calyx : small, about 2 mm. long, with 5 short teeth, glabrous.

Corolla : funnel-campanulate, 3-4 cm. long, white flushed rose to deep rose, with crimson blotch at base, and with or without spots ; lobes 5-6, broadly rounded, 1·3 cm. long, 2 cm. broad, emarginate.

Stamens : 10, unequal, 1·7-2·7 cm. long ; filaments minutely puberulous at the base.

Pistil : about 3 cm. long ; ovary conoid, thin, about 7 mm. long, glabrous, 8-10-chambered ; style glabrous ; stigma small.

Capsule : cylindric, about 3 cm. long, 4-5 mm. broad, blackish, curved, glabrous.

Habitat : Western Yunnan ; Shweli—Salween Divide. In thickets and on margins of forests at 8000-11,000 ft. altitude.

R. fulvum in its natural habitat is a plant of open forests or thickets, and in such situations is somewhat straggling with branches from the base. In cultivation it becomes a more shapely shrub, better clothed with foliage. It is essentially a species of the Shweli—Salween and N'Maikha—Salween Divides. It and its ally *R. fulvoides* have a peculiar granular indumentum unlike that of any other species.

RHODODENDRON NIPHARGUM, *Balf. f. & Ward* in *Notes R.B.G. Edin.*, vol. 10 (1917), 125.

Illustration—

Habit : a shrub of 15-25 ft. ; shoots below inflorescences about 5 mm. diameter ; shoots at first clad with a thin and patchy white to grey indumentum, later glabrescent.

Leaves : lamina leathery, broadly oblanceolate or oblong-oblanceolate or obovate, 10-20 cm. long, 4-6·5 cm. broad ; apex obtuse ; base tapered ; upper surface dark green, semi-rugulose, glabrous at maturity, but unfolding leaves are white floccose above, midrib grooved, primary veins about 15 on each side deeply impressed ; under surface clad with a thin white felty indumentum which on old leaves tends to become ash-grey, midrib prominent, greenish, glabrescent, primary veins prominent, becoming glabrescent ; petiole 1-2 cm. long, stout, at first whitish tomentose, ultimately glabrescent.

Inflorescence : a racemose umbel of 10-15 flowers ; rhachis about 1 cm. long, more or less floccose.

Pedicels : 2 cm. long, more or less floccose.

Calyx : minute, about 1 mm. long, with 5 rounded or triangular lobes, glabrous or sparsely floccose.

Corolla : campanulate, 3·5 cm. long, white flushed rose or pale rose, with deep crimson blotch at base and crimson markings on the posterior side ; lobes 5, 1 cm. long, 2 cm. broad, emarginate.

Stamens : 10, unequal, 1·5-3 cm. long ; filaments minutely puberulous at base.

Pistil : about 3 cm. long ; ovary 7 mm. long, thin, tapered into style, glabrous or minutely pubescent ; style glabrous.

Capsule : 4-5 cm. long, 4 mm. broad, thin, cylindric, distinctly ribbed, more or less sickle-like, blackish, glabrous, 5-6-chambered.

Habitat : Yunnan ; Bei-ma-shan, Chungtien Plateau and Lichiang Range. In fir and pine forests and rhododendron thickets at 10,000-13,000 ft. altitude.

A close ally of *R. uvarifolium*, with leaves broader in proportion to their length than what is found in *R. uvarifolium*.

RHODODENDRON UVARIFOLIUM, *Diels* in *Notes R.B.G. Edin.*, vol. 5 (1912), 213.

(R. Monbeigii, *Rehd. & Wils.*)

Illustration—

Habit : a shrub of 18-20 ft. ; branches below inflorescences stout, 5-7 mm. diameter ; young shoots at first thinly whitish tomentose, later glabrescent.

Leaves : lamina narrowly oblanceolate, 12-23 cm. long, 3-6 cm. broad ; apex obtuse or acute, somewhat beaked ; base tapered ; upper surface glabrous at maturity, midrib grooved, primary veins 14-16 on each side impressed ; under surface clad with a thin white felty tomentum, midrib prominently raised, glabrous or very slightly floccose, primary veins raised ; petiole about 1 cm. long, stout, at first clad with a thin whitish tomentum, later glabrous.

Inflorescence : a racemose umbel of 6-8 flowers ; rhachis about 1 cm. long, more or less rufous floccose.

Pedicels : 2 cm. long, slightly floccose.

Calyx : minute, about 1 mm. long, rim undulate with minute rounded or somewhat pointed lobes, glabrous or sparsely floccose.

Corolla : funnel-campanulate, pink, with crimson spots and a deep crimson blotch at the base ; lobes 5, 1 cm. long, 1·5 cm. broad, emarginate.

Stamens : 10, unequal, 2-3·5 cm. long ; filaments puberulous at the base.

Pistil : 3·5 cm. long ; ovary 8 mm. long, thin, slightly puberulous or glabrous, 8-chambered ; style glabrous.

Capsule :

Habitat : North-Western Yunnan ; Yangtze Valley and Chungtien Plateau. In rhododendron forests at 7000-8000 ft. altitude.

The distinctions between this and *R. niphargum* are chiefly those of leaf-size and shape. It has been collected only two or three times, while *R. niphargum* is apparently much more common.

GLAUCUM SERIES

General Characters :—Small or dwarf, rarely tall, shrubs with short branchlets. Leaves evergreen, oblanceolate to obovate, thick, scaly and often very glaucous below. Inflorescence 3-6-flowered, rarely 12-flowered (*R. Genestierianum*), umbellate or shortly racemose. Flowers yellow, pink or purple. Calyx large and leafy (except *R. Genestierianum*). Corolla more or less campanulate, short, 5-lobed, not scaly outside or only slightly so. Stamens 10, usually hairy nearly to the top (glabrous in *R. Genestierianum*). Ovary 5-celled, scaly ; style short and thick, often recurved, mostly glabrous. Capsule short, often enclosed by the persistent calyx-lobes.

Distribution :—Sikkim, South-East Thibet, Upper Burma and Yunnan ; mainly above 10,000 ft.

A small and interesting group in which *R. Genestierianum* is an outstanding species and perhaps not very naturally placed in this series. The general affinity is clearly with the *Campylogynum* series, being perhaps more primitive representatives of that group.

J. H.

GLAUCUM SERIES

KEY TO THE SPECIES

A. Flowers yellow or greenish yellow :

B. Scales very few and distant on the lower surface of the leaves . . . . . **brachyanthum.**

B. Scales very numerous and close on the lower surface of the leaves :

C. Calyx-lobes with only a few scales down the middle, the tube densely scaly outside . . . **hypolepidotum.**

C. Calyx-lobes densely scaly all over the outside :

D. Stamens hairy nearly to the top ; style glabrous ; calyx-lobes $\frac{1}{6}$ in. long in flower . . . **charitostreptum.**

D. Stamens hairy only in the lower part ; style slightly pubescent ; calyx-lobes $\frac{1}{4}$ in. long in flower **shweliense.**

A. Flowers pink or purple :

B. Flowers about 12 in a raceme, small, plum-purple covered with a glaucous bloom ; leaves acutely acuminate, rather large, with well-marked lateral nerves, glaucous below **Genestierianum.**

B. Flowers 3-6 in an umbel ; pink to purple :

C. Leaves pointed at the apex ; stamens hairy only in the lower half . . . . . **glaucum.**

C. Leaves rounded to a mucronate apex ; stamens hairy nearly to the top :

D. Scales on the lower surface contiguous or nearly so :

E. Flowers clear apple-blossom pink ; scales on lower surface of the leaves not quite contiguous **charitopes.**

E. Flowers dull crimson ; scales on lower surface of the leaves contiguous, wax-like . . **pruniflorum.**

D. Scales on the lower surface about 4-5 times their own diameter apart, soon falling off ; flowers pink **tsangpoense.**

RHODODENDRON BRACHYANTHUM, *Franch.*

ILLUSTRATION—Hutchinson in *Bot. Mag.*, t. 8750 (1918).

HABIT: small sparingly branched shrub; branchlets slightly scaly.

LEAVES: oblong to oblong-elliptic, rounded at each end, conspicuously mucronate, 1¼-1½ in. long, ½-¾ in. broad, *glaucous* below and *with very few scales*; leaf-stalks loosely scaly, ⅙ in. long.

INFLORESCENCE: terminal, umbellate, 3-4-flowered; *flower-stalks very slender*, 1-1¼ in. long, scaly.

FLOWERS: pale yellow or greenish-yellow.

CALYX: *large and leafy*, 5-lobed, lobes rounded-elliptic, ⅓ in. long, nervose and with a few scales on the outside, *the tube densely scaly.*

COROLLA: broadly campanulate, about ¾ in. long, 5-lobed; tube and lobes not scaly outside, the tube softly pubescent inside.

STAMENS: 10, subequal, exserted, *pubescent nearly their full length.*

OVARY: 5-celled, covered with very small scales; style short and very stout, about ⅙ in. long, glabrous.

CAPSULE: ¼ in. long, *hidden by the persistent calyx-lobes.*

HABITAT: Yunnan, near Tali, about 9000 ft.

RHODODENDRON CHARITOPES, *Balf. f. & Farrer.*

ILLUSTRATION—

HABIT : small bush up to 1 ft. high ; branchlets loosely scaly.

LEAVES : few, obovate, bluntly mucronate, 1-1½ in. long, ½-¾ in. broad, glabrous above, *glaucous below*, densely scaly, the scales unequal, *less than their own diameter apart.*

INFLORESCENCE : terminal, *3-flowered* ; flower-stalks ¾ in. long, scaly.

FLOWERS : clear apple-blossom-pink speckled with crimson.

CALYX : large, 5-lobed to base, ⅓ in. long, lobes ovate, *very acute*, with small scales on the back and on the margin.

COROLLA : broadly tubular, 5-lobed, 1 in. long ; tube slightly scaly outside.

STAMENS : 10, *hairy nearly to the apex*, long-exserted.

OVARY : 5-celled, densely scaly ; style thick, ⅓ in. long, glabrous.

CAPSULE : ⅓ in. long, slightly scaly.

HABITAT : Upper Burma, Shing Hong Pass ; 10,500-12,000 ft.

RHODODENDRON CHARITOSTREPTUM, *Balf. f. & Ward.*

Illustration—

Habit : dwarf shrub ; branchlets short, thinly scaly.

Leaves : few, obovate-elliptic, bluntly mucronate, 1-2 in. long, $\frac{3}{4}$-1 in. broad, glaucous below, densely scaly with small numerous yellow scales less than their own diameter apart and fewer and larger scattered brown scales ; leaf-stalks $\frac{1}{4}$ in. long.

Inflorescence : terminal, 4-5-flowered, *very shortly racemose* ; flower-stalks 1 in. long.

Flowers : lemon-yellow, with red stamens.

Calyx : large, leafy, 5-lobed to base ; lobes rounded, $\frac{1}{6}$ in. long, *densely scaly outside.*

Corolla : $\frac{1}{2}$ in. long, broadly tubular, 5-lobed ; tube not scaly outside.

Stamens : 10, hairy nearly to the apex.

Ovary : 5-celled, densely scaly ; style thick, short, curved, glabrous.

Capsule : $\frac{1}{4}$ in. long, broad and thick, *laxly scaly.*

Habitat : Upper Burma, precipices of Imaw Bum ; 11,000-12,000 ft., amongst granite rocks.

RHODODENDRON GENESTIERIANUM, *Forrest.*

Illustration—

Habit: shrub up to 12 ft. high; branchlets purplish, with long internodes.

Leaves: clustered, oblanceolate, *acutely acuminate*, long-narrowed to the base, 4-6 in. long, 1-1½ in. broad, *very glaucous below*, glabrous above, the scales below *very few and minute*; leaf-stalks ½-¾ in. long.

Inflorescence: terminal, *racemose*, about 12-flowered; axis about 1 in. long; flower-stalks slender, about 1 in. long.

Flowers: small, plum-purple, covered with a *glaucous bloom.*

Calyx: small and shortly lobed, glabrous.

Corolla: shortly and broadly tubular, 5-lobed, about ½ in. long, glabrous outside.

Stamens: 10, *glabrous*, shortly exserted.

Ovary: 5-celled, glandular, glands not contiguous; style curved, shorter than stamens, glabrous.

Capsule: ⅓ in. long, loosely scaly.

Habitat: Yunnan, Eastern flank of the N'Maikha—Salween Divide; in cane brakes and on open rocky slopes.

RHODODENDRON GLAUCUM, *Hook. f.* Flowers deep pink.

A. Portion of lower surface of leaf. B. Calyx and pistil. C. Calyx-lobe. D. Cross-section of ovary. E. Stamen. F. Fruit surrounded by calyx.

RHODODENDRON GLAUCUM, *Hook. f.*

ILLUSTRATIONS—Hook. f. *Rhod. Himal.*, t. 17 (1851); *Bot. Mag.*, t. 4721 (1853).

HABIT: small shrub, branchlets scaly.

LEAVES: lanceolate to oblanceolate, *pointed* and mucronate, $1\frac{1}{2}$-$3\frac{1}{2}$ in. long, $\frac{1}{2}$-1 in. broad, dull and thinly scaly above, glaucous below and scaly, *the scales unequal*, the smaller pale yellow and about their own diameter apart, with scattered larger brown scales; leaf-stalks $\frac{1}{4}$-$\frac{1}{2}$ in. long, scaly.

INFLORESCENCE: terminal, 5-6-flowered; flower-stalks rather slender, $\frac{3}{4}$ in. long, scaly.

FLOWERS: pink, not scented.

CALYX: large and leafy, lobes ovate-lanceolate, *markedly pointed*, $\frac{1}{3}$ in. long, *densely scaly outside.*

COROLLA: $\frac{3}{4}$-1 in. long, 5-lobed, not scaly outside or only slightly so on the lobes.

STAMENS: 10, exserted, *pubescent only in the lower part.*

OVARY: 5-celled, scaly; style glabrous, becoming thicker towards the apex and with a *very large lobulate stigma.*

CAPSULE: short and ovoid, about $\frac{1}{3}$ in. long, hidden by the persistent calyx lobes, the style often persistent.

HABITAT: Sikkim, 10,000-12,000 ft.

RHODODENDRON MICROMERES, *Tagg.*

Habit : a straggling epiphytic shrub of 3-6 ft.

Leaves : lamina oblong-elliptic, 3-7 cm. long, 1·5-3 cm. broad ; apex obtuse, mucronulate ; base obtuse to cuneate ; upper surface bright green, lepidote with yellowish scales several times their own diameter apart ; midrib deeply sunk, primary lateral veins about 10 on each side ; under surface glaucous grey, punctulate with scales a little more than their own diameter apart, varying much in size and deeply sunk in pits in the epidermis, epidermis distinctly papillate, midrib prominent ; petiole about 5-8 mm. long, grooved above, rounded below, densely lepidote.

Inflorescence : a terminal umbel of 3-7 flowers (the terminal umbel sometimes supported immediately below by one or more lateral umbels which have fewer flowers) ; terminal rhachis 5-7 mm. long, lepidote and more or less hairy, lateral rhachises somewhat shorter.

Pedicels : thin, flexuous, about 2-3 cm. long, clad with whitish or golden scales and more or less pubescent.

Calyx : 2-4 mm. long, greenish tinted reddish at margin ; lobes 5, broadly rounded, often reflexed, greenish, lepidote on the back with the margin elepidote.

Corolla : small, when fully open rotately campanulate, creamy-yellow, lepidote outside on tube and lobes, glabrous inside ; tube short and broad, about 4 mm. long ; lobes 5, 1-1·4 cm. long, broadly rounded, about 1 cm. long, 5-7 mm. broad.

Stamens : 10, subequal, 5-8 mm. long ; filaments white, thickened towards the base, shorter filaments densely hairy over the whole or two-thirds of length, longer filaments almost glabrous ; anthers ochre-coloured or pale brown, nearly 1 mm. long.

Pistil : about 6-8 mm. long ; ovary short, conoid, 2·5-4 mm. long, densely clad with whitish glistening scales ; style very short, about 5 mm. long, often lepidote at the base, abruptly curved, thickened to the truncate stigma which is about 1·5 mm. across and pinkish.

Capsule : about 1·5 cm. long, 4-5 mm. broad, borne upon thin stalks as much as 5·5 cm. long and supported at the base by the persistent calyx, dehiscing from the apex into 5 narrow valves.

Habitat : South-Eastern Tibet, North-Western Yunnan, North-Eastern Upper Burma and Assam.

This rhododendron is more interesting botanically than of horticultural attractiveness. It was first found by Mr. George Forrest in 1922 on the Salwin—Kiu chiang divide. Forrest gathered it again in 1924 with flower-buds. Again in 1925 it was gathered by him in foliage. Rock gathered it in 1923 in fruit and fading flowers, and in the same year in flower and fruit. Kingdon Ward collected it (or a form of it) in 1924 at Pemako during his exploration of the Tsangpo Gorge. He also gathered it in North-Eastern Upper Burma (Seinghku Wang) in 1926, and again in 1928 in the Delei Valley, Assam. From Ward's seed (*Ward* 6251) plants agreeing with Forrest's and Rock's gatherings have flowered at Bulstrode Gardens, Gerrard's Cross, Bucks, and the flower characters given above are based largely upon cultivated plants raised from Ward's seed and sent to Edinburgh by Sir John Ramsden.

R. micromeres in leaf shape, the papillate under surface and the type of lepidoteness of the leaf under surface is closely akin to *R. Genestierianum*. The flower characters also suggest affinity with *R. Genestierianum*. From that species it differs chiefly in the colour of the corolla. A characteristic feature of the plant in fruit is the long pendulous fruit stalks in contrast with the relatively short pedicels of the flower.

The following are the numbers of *R. micromeres* :—

South-Eastern Tibet : Forrest 21811, 22856.
Rock 10223, 11167.
Ward 6251.

North-Western Yunnan : Forrest 25588, 25612, 25779.
Rock 17054, 18475.

North-Eastern Upper Burma : Forrest 26636, 27686.
Ward 6848.

Assam : Ward 8169, 8326.

H. F. T.

RHODODENDRON HYPOLEPIDOTUM, *Balf. f. & Forrest.*

Illustration—

Habit : shrub up to 4½ ft. high ; branchlets scaly.

Leaves : oblanceolate, narrowed to the base, rounded to an abrupt mucro at the apex, 1¼-2 in. long, ½-¾ in. broad, scaly on both surfaces, the *scales below rather dense and very unequal*, flakey, some pale, others much darker ; lateral nerves distinct ; leaf-stalks ⅛ in. long, scaly.

Inflorescence : terminal, very shortly racemose, 5-6-flowered ; flower-stalks 1-1¼ in. long, rather slender, loosely covered with small scales.

Flowers : yellow, small.

Calyx : large and leafy, 5-lobed, ¼ in. long ; tube scaly outside ; lobes broadly elliptic, *fringed with minute scales* and with a few scales down the middle.

Corolla : broadly campanulate, ⅔ in. long, 5-lobed ; tube softly pubescent inside, like the lobes *not scaly outside*.

Stamens : 10, slightly exserted, pubescent nearly to the top.

Ovary : 5-celled, densely scaly ; style very thick and short, glabrous.

Habitat : South-Eastern Tibet, near Tsekou ; 13,000 ft., dry open situations in pine forests.

RHODODENDRON PRUNIFLORUM, *Hutch. & Ward, n. sp.*

Illustration—

Habit: small compact undershrub 1-2 ft. high, with short twiggy scaly branchlets; bark on the older parts reddish-brown, peeling off.

Leaves: when rubbed emitting a strong and unpleasant odour, obovate-elliptic, rounded and obtusely mucronate at the apex, slightly narrowed at the base, 2-3·5 cm. long, 1-2 cm. broad, glabrous above, *very densely scaly below*, the *scales contiguous* or slightly overlapping, pale and wax-like with fairly *numerous larger brown thinner scales overtopping them* which soon fall off; leaf-stalks $\frac{1}{6}$ in. long, densely scaly.

Inflorescence: terminal, subumbellate, 3-5-flowered; flower-stalks $1\frac{1}{4}$ in. long, densely scaly.

Flowers: plum-purple or nearly crimson or violet.

Calyx: deeply 5-lobed, densely scaly outside the base; lobes elliptic, $\frac{1}{6}$ in. long, glabrous or loosely scaly outside.

Corolla: broadly-tubular-campanulate, 5-lobed, about $\frac{1}{2}$ in. long; tube and lobes glabrous outside.

Stamens: 10, shortly pubescent in the lower $\frac{2}{3}$ or less.

Ovary: 5-celled, densely scaly; style short and recurved, glabrous.

Capsule: $\frac{1}{4}$ in. long, surrounded by the persistent calyx-lobes.

Habitat: North-Eastern Burma, Seinghku Wang, 11,000 ft. [*Ward* 7045, type]; 11,000-12,000 ft. [*Ward* 6924]; Valley of the Di Chu, 10,000-11,000 ft. [*Ward* 7188].

RHODODENDRON PEMAKOENSE, *K. Ward* in *Gard. Chron.*, lxxxviii. (1930), 298.

Habit : erect or semi-erect aromatic undershrub.

Leaves : typically obovate, sometimes narrowly oval, apex rounded and with a sharp mucro, narrowed to the base, shortly stalked, about 2 cm. long and 5 mm. broad, upper surface laxly lepidote, under surface slightly glaucous and lepidote, the scales hardly exceeding their own diameter apart.

Inflorescence : flowers solitary or in pairs, on erect stalks 1·3-2 cm. long, lengthening in fruit to 4 cm. or more.

Flowers : purple.

Calyx : leafy, lobes rounded, unequal, spreading, lepidote.

Corolla : pubescent all over, laxly lepidote, broadly funnel-shaped, about 3 cm. long and 3·5 cm. across.

Stamens : spreading, unequal, shorter than the style ; filaments with a tuft of hairs at the base.

Pistil : ovary closely lepidote ; style crimson, as long as or a little longer than the corolla, base bristly-hairy.

Capsule : less than 1·3 cm. long ; seeds golden-brown, not winged.

Habitat : Tibet, Tsangpo Gorge ; Pemako-chung, 10,000 ft. ; on cliffs in the glens on Mamcha Barwa and Sanglung.

RHODODENDRON SORDIDUM, *Hutchinson, n. sp.*

ILLUSTRATION—

HABIT : a small scrub plant ; older branchlets covered with thin flaky brown bark ; young branchlets very short, bearing 8-10 leaves, dark purple, sparingly scaly.

LEAVES : aromatic, obovate-elliptic, slightly narrowed to the base, rounded and with a small hard mucro at the apex, 1-1½ in. long, ½-¾ in. broad, leathery, sparingly scaly above but at length smooth, with about 9 pairs of slightly distinct nerves, greyish below and furnished below with numerous flaky scales, the scales unequal-sized and about their own diameter apart, densely papillous between the scales ; nerves distinct below when dry ; leaf-stalks stout, scaly.

INFLORESCENCE : terminal, distinctly racemose, about 5-flowered ; bracts very early deciduous ; flower-stalks 1¼ in. long, slender, with scattered waxy scales.

FLOWERS : dark purple.

CALYX : well developed, lobes suborbicular, about ⅛ in. diameter, with a few scales towards the base and on the margin, veiny on the inside.

COROLLA : broadly campanulate, 5-lobed ; tube ⅓ in. long, glabrous outside, slightly pubescent within, lobes broadly oblong-orbicular.

STAMENS : 10, nearly as long as the corolla, pubescent in their lower ⅔.

OVARY : 5-celled, densely scaly ; style short and slightly curved, glabrous, with a broad stigma.

CAPSULE : not seen.

HABITAT : Assam ; Kaso Peak, Delei Valley, 13,000-14,000 ft., 2 July 1928, *Ward* 8415 (type).

This number of Ward's collection has appeared in the list of cultivated Rhododendrons as **R. pruniflorum**, *Hutch. & Ward*, but it is not that species. It differs from it especially in the scattered scales on the lower surface of the leaves, which are of an unequally sordid green on both surfaces. In *R. pruniflorum* the scales are very dense, and there are scattered larger brown scales over the green under-layer. The calyx-lobes in *R. sordidum* are more rounded and slightly scaly only near the base and on the margin. Another relative is **R. charitopes**, *Balf. f. & Farrer*, which has ovate, subacute calyx-lobes and pink flowers.

As I indicated on p. 293, the *Glaucum* and *Campylogynum* series are very nearly related, especially through *R. pruniflorum* and the new species here described, which link up the two groups.

J. H.

RHODODENDRON SHWELIENSE, *Balf. f. & Forrest.*

Illustration—

Habit : shrub 2-2½ ft. high, with aromatic foliage ; branchlets densely covered with scales.

Leaves : few, elliptic-oblanceolate, slightly mucronate, about 1½ in. long, ½ in. broad, scaly above, at length glabrous, *very glaucous below*, with *numerous loose blackish scales* a little more than their own diameter apart.

Inflorescence : terminal, few-flowered ; flower-stalks ½ in. long, scaly.

Flowers : greenish-yellow ?

Calyx : large, leafy, 5-lobed to the base, ¼ in. long, scaly and glaucous outside, at length nervose.

Corolla : ⅔ in. long, 5-lobed, quite glabrous outside.

Stamens : 10, hairy in lower part.

Ovary : 5-celled, densely scaly ; style *slightly pubescent.*

Capsule :

Habitat : Shweli—Salween Divide, 10,000-11,000 ft., open cliffs and rocky slopes.

RHODODENDRON TSANGPOENSE, *Hutch. & Ward, n. sp.*

Illustration—

Habit : small shrub 1-2 ft. high, forming dense tangled scrub ; branchlets twiggy, loosely scaly.

Leaves : obovate, rounded at the apex and very conspicuously mucronate, narrowed at the base, 1-1½ in. long, ⅔-¾ in. broad, glabrous above, glaucous and *very laxly scaly below*, the scales about *4-5 times their own diameter apart* ; leaf-stalks ¼ in. long.

Inflorescence : terminal, 3-5-flowered ; flower-stalks 1 in. long, slightly scaly.

Flowers : pink or deep cerise.

Calyx : large, deeply 5-lobed, scaly outside the base, lobes elliptic, ¼ in. long, nearly glabrous.

Corolla : broadly tubular-campanulate, 5-lobed, nearly 1 in. long, glabrous outside.

Stamens : 10, densely *hairy nearly to the top.*

Ovary : 5-celled, scaly ; *style thick, sharply bent down,* glabrous.

Capsule : ¼ in. long.

Habitat : Tibet, Doshong La, 12,000-13,000 ft., steep alpine slopes on exposed or sheltered situations [*Ward* 5843, 5844].

GRANDE SERIES

The Grande Series is comparable only with the Falconeri series, with which it has many affinities. It has the same distribution, extending from Nepal eastwards through the Himalayas into Upper Burma, Yunnan and Szechuan. Like that series, too, it is recognised by the large leaves which are not scaly, by the minute calyx, by the usually mortar-shaped or ventricose fleshy corolla with 7-10 lobes, by the 14-20 stamens and by the 7-20-chambered ovary. Its distinction from the Falconeri series lies chiefly in the character of the indumentum. This is bistrate as is that of the Falconeri series, but the upper layer does not show any of the cup or funnel-shaped hairs which are characteristic of the Falconeri series and separate that series from all other rhododendrons. The indumentum never presents a shaggy appearance but rather a thin plastered appearance, somewhat loose and woolly in a few species only. The two series present an interesting parallelism. Where they touch Szechuan, the species tend to have a glabrous ovary. Both series have sections with short and broad petioles.

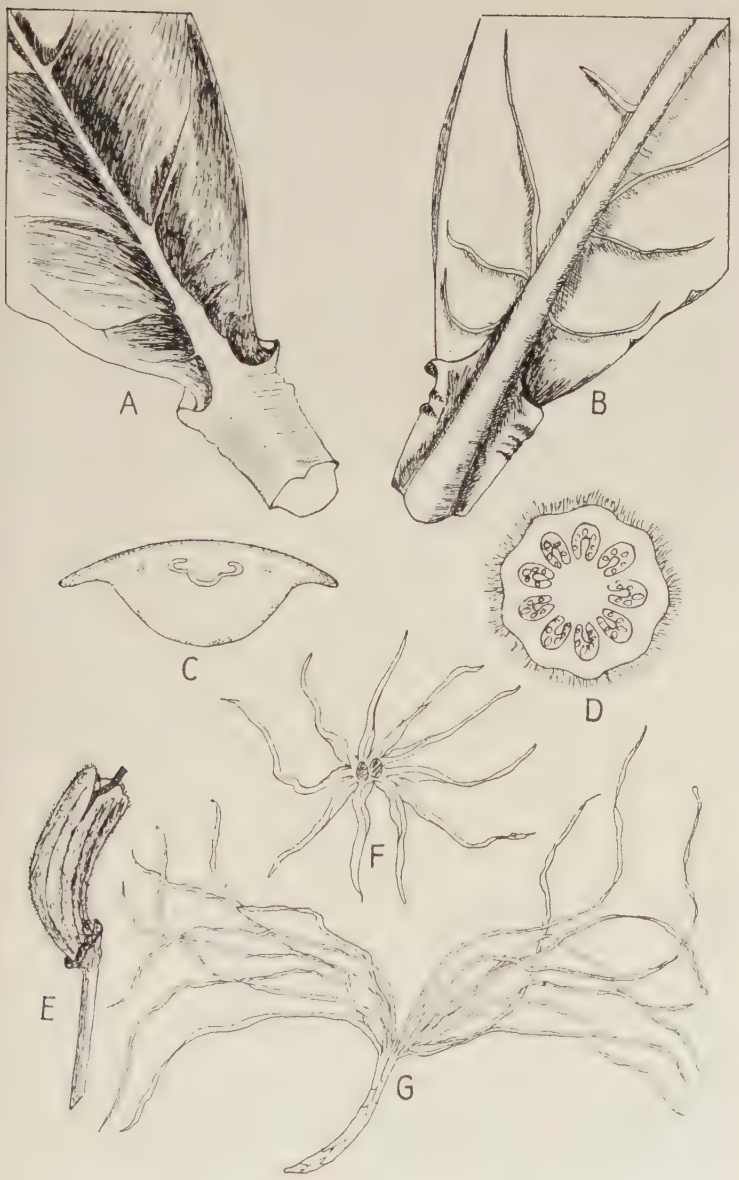
The most divergent species are those which occur in Szechuan, which, in addition to the glabrous ovary, have less ventricose corollas. The chief development of the series is in Western Yunnan, and especially towards the Burmese frontier.

H. F. T.

GRANDE SERIES

KEY TO THE SPECIES

A. Himalayan, Yunnan and Burmese species ; ovary tomentose or glandular ; corolla mortar-shaped or funnel-shaped :
  B. Petioles of leaves below inflorescences 2-5 cm. long, more or less cylindric :
    C. Indumentum woolly, thin or absent ; corolla funnel-shaped, red :
      D. Indumentum absent or thin, greyish, at times forming a marginal border . . . . . **protistum.**
      DD. Indumentum loosely woolly, light brown . **giganteum.**
    CC. Indumentum woolly ; corolla mortar-shaped, whitish to pale yellow . . . . . **Macabeanum.**
    CCC. Indumentum silvery, plastered ; corolla mortar-shaped, creamy-white :
      D. Leaves narrow oblanceolate, rarely exceeding 2 inches broad . . . . . **sidereum.**
      DD. Leaves obovate to oblanceolate, over 2 inches broad :
        E. Average breadth of leaf, 3-4 inches . . **grande.**
        EE. Average breadth of leaf, 6-14 inches . **sinogrande.**
  BB. Petioles of leaves below inflorescences less than 2 cm. long, flat above :
    C. Indumentum thin, plastered, ashy-grey to fawn :
      D. Corolla deep magenta-rose . . . . **praestans.**
      DD. Corolla creamy-white . . . **coryphaeum.**
    CC. Indumentum loosely woolly non-agglutinate, light brown **semnoides.**
AA. Szechuan species ; ovary glabrous ; corolla campanulate :
  B. Petioles short, flatish above . . . . **Watsonii.**
  BB. Petioles distinct, rounded . . . **peregrinum.**



RHODODENDRON CORYPHAEUM, *Balf. f. & Forrest.* (Original drawing.)

A. Base of leaf (upper surface) and petiole (slightly reduced). B. Base of leaf (under surface) showing broad winged petiole (slightly reduced). C. Section of petiole (slightly enlarged). D. Section of ovary (enlarged). E. Fruit (slightly reduced). F and G. Indumentum hairs of leaf under surface, after expansion in potash (much enlarged).

RHODODENDRON CORYPHAEUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 12 (1920), 100.

(R. SEMNUM, *Balf. f. & Forrest.*)

ILLUSTRATION—

HABIT : a large shrub or tree of 15-20 ft., branches below inflorescences as much as 2 cm. in diameter, glabrescent.

LEAVES : lamina oblong-obovate to oblanceolate, 17-44 cm. long, 6-12 cm. broad, broadest near the rounded subtruncate or retuse apex, gradually tapered to the cuneate base and then decurrent on the very short broad petiole ; upper surface mat green, glabrous, midrib grooved, widening to the base and then slightly raised, primary veins 14-16 on each side impressed ; under surface white or grey to fawn, smooth, clothed with a thin skin-like or crusted indumentum of agglutinate hairs, midrib prominent, almost glabrous.

INFLORESCENCE : a racemose umbel of 20 or more flowers ; rhachis stout, 2-3 cm. long, with a thin brownish tomentum.

PEDICELS : 4-5 cm. long, swollen below the calyx, clothed with a thin fawn or reddish-brown tomentum.

CALYX : short, with 8 minute teeth, clothed like the pedicel.

COROLLA : oblique-campanulate, 4·5 cm. long, creamy-white with a basal crimson blotch prolonged upwards as spotted streamers ; lobes 8.

STAMENS : 16, shorter than corolla and pistil, 2-3 cm. long ; filaments glabrous or slightly puberulous.

PISTIL : equalling or a little shorter than corolla ; ovary oblong-ovoid, densely tomentose, 9-13-chambered ; style glabrous ; stigma large, discoid-lobulate.

CAPSULE : slightly curved, 3-4 cm. long, 1 cm. in diameter, slightly ribbed, rusty-brown to greyish-tomentose, fruit-stalks as much as 5 cm. long.

HABITAT : North-Western and Western Yunnan ; Mekong—Salween Divide. In rhododendron and pine forests at 12,000 ft. altitude.

This is so close an ally of *R. praestans* that it may yet have to be included in it. The most obvious mark of difference is the creamy-white colour of the flower. In leaves and petioles there is close agreement. *R. coryphaeum* and *R. semnum* appear to be one species.

RHODODENDRON GIGANTEUM, *G. Forrest MS.* (descript. *Tagg*) in *Notes R.B.G. Edin.*, vol. 15 (1926), 106.

Illustration—

Habit : a large tree 80 ft. high with straight bole, young branches clothed with a thin greyish felt-like indumentum.

Leaves : lamina elliptic or oblanceolate, 12-37 cm. long, 4-12 cm. broad ; apex broadly acute ; base narrowed, slightly auricled ; upper surface bright mat green, glabrous or with vestiges of indumentum, midrib and primary veins deeply grooved ; under surface clothed with a buff or light-cinnamon indumentum, midrib prominently raised, primary veins raised, 21-24 on each side ; petiole stout, 2·5-4 cm. long, convex above, slightly grooved.

Inflorescence : a corymbose raceme of 20-25 flowers ; rhachis stout, 4-5 cm. long.

Pedicels : stout, 2-3 cm. long, clothed with a buff or pinkish tomentum.

Calyx : 2-3 mm. long, with 8 small broadly triangular teeth, tomentose.

Corolla : funnel-campanulate, 6-6·5 cm. long, fleshy, deep rose-crimson without spots but with a slight blotch of deep crimson at the base, which has 8 nectar pouches ; lobes 8.

Stamens : 16, unequal, 2·6-4·2 cm. long ; filaments glabrous.

Pistil : about 5 cm. long ; ovary oblong, 9-12 mm. long, clad with a dense fawn-pink tomentum, 16-chambered ; style stout, glabrous, expanded below the broad discoid stigma.

Capsule : woody, oblong, slightly curved and ridged, 4 cm. long, 1·5 cm. broad, with deep rust-brown tomentum which wears off.

Habitat : South-Western Yunnan ; eastern flank of the N'Maikha—Salween Divide. In open forests at 9000 ft. altitude.

This species resembles *R. protistum* in most of its details. Its chief and perhaps only marks of distinction are the uniform brown indumentum which clothes the under surface of the leaves and the deep crimson corolla. There are, however, intermediate forms, to the most striking of which (one with marginal indumentum) the varietal name, var. *seminudum*, has been attached. The leaves of young plants of both are glabrous below.

RHODODENDRON GRANDE, *Wight* in *Calcut. Journ. Nat. Hist.*, vol. 8 (1847), 176.

(R. ARGENTEUM, *Hook. f.*; R. LONGIFOLIUM, *Nutt.*; WALDEMARIA ARGENTEA, *Klotzsch.*)

ILLUSTRATIONS—*Wight* in *Icones Pl. Ind. Orient.*, vol. 4 (1850), t. 1202; *Hook. f.* in *Rhodo. Sikkim Himal.* (1849), t. 9; *Bot. Mag.*, vol. 84 (1858), t. 5054; *Klotzsch* in *Reis. Pr. Waldem. Bot.*, t. 53-54.

HABIT: a tree of 30 ft.; trunks solitary or two or three spreading.

LEAVES: lamina oblong-lanceolate to oblanceolate or oblong-elliptic, 14-30 cm. long, 8-13 cm. broad; apex obtuse to acuminate, more or less cuspidate; base narrowed, obtuse to cuneate; upper surface slightly rugulose, deep green, shining, midrib and primary veins deeply impressed; under surface silvery white with a thin indumentum of agglutinate hairs, midrib prominently raised, pale green, primary veins prominent, 20-24 on each side; petiole 4-5 cm. long, cylindric, slightly grooved above, grey-green, with a thin whitish indumentum.

INFLORESCENCE: a large rounded corymb of 20-25 flowers; rhachis 4-5 cm. long, lengthening in fruit to as much as 8 cm. long.

PEDICELS: 2-3 cm. long, glandular or glandular and slightly floccose.

CALYX: short, 1-2 mm. long, with 8 undulate lobes.

COROLLA: ventricose-campanulate, 5-7 cm. long, 8 furrowed at base, pale rose in bud, later white or creamy-white with basal purple blotches in the nectar pouches; lobes 8.

STAMENS: 16, unequal, 3·5-5 cm. long; filaments white, pubescent at base or glabrous.

PISTIL: 4·5-6 cm. long; ovary oblong, densely glandular or glandular and tomentose, 16-chambered; style stout, glabrous or with a few glands at base; stigma large, discoid.

CAPSULE:

HABITAT: Sikkim and Bhutan. Forming forests at 8000-10,000 ft. altitude.

This is the only Himalayan species in the series. In its typical condition it is characterised by the oblong-oblanceolate leaves with their silvery under surface. Forms occur in cultivation with a rougher and somewhat tawny indumentum. It was thought at one time that these might represent *R. grande* as opposed to *R. argenteum* with its more silvery under surface. There seems little doubt that *R. argenteum* is a synonym of *R. grande*.

RHODODENDRON MAGNIFICUM, *Ward* in *Journ. Bot.*, vol. 73 (1935), 247.

Illustration—

Habit : a tree 40-60 ft. high.

Leaves : lamina oblong to oblong-obovate, 20-32 cm. long, 10-14 cm. broad ; apex broadly rounded, gradually tapering to the truncate base ; upper surface mat green, rugulose ; midrib slightly impressed, channelled towards the base ; primary veins 10-12 on each side ; under surface clad with a thin loose web-like white tomentum tending to disappear on older leaves ; petiole stout 3·5 cm. long, flattish above, clothed with a grey tomentum.

Inflorescence : a racemose umbel of about 30 flowers.

Pedicels : short, 2-3 cm. long, pubescent.

Calyx : minute, with 8 short lobes, pubescent.

Corolla : campanulate, 4-5 cm. long, 4 cm. broad, rosy-purple, unmarked, with 8 darker nectar glands at base, fleshy ; lobes 8.

Stamens : 16, shorter than corolla, unequal, 2·7-3·7 cm. long ; filaments glabrous.

Pistil : about 4 cm. long ; ovary conic-truncate, fluted at base, densely whitish tomentose, 16-20 chambered ; style about 3·5 cm. long, crimson.

Capsule :

Habitat : Burma-Tibet frontier, Adung Valley at 6,000-8,000 ft.

Rh. magnificum is allied to *Rh. protistum* and to *Rh. sinogrande*, differing from the former by the web-like indumentum and from the latter by the sparser indumentum and rose-purple flowers.

RHODODENDRON MACABEANUM, *Watt MS.* (descript.*Balf.f.*) in *Notes R.B.G. Edin.*, vol. 12 (1920), 128.

Illustration—

Habit : a tree as much as 45 ft. high with short stem ; one-year-old branches thick, densely tomentose with chestnut-brown indumentum.

Leaves : lamina leathery, oblong-elliptic or somewhat rounded, 27 cm. long, 18 cm. broad ; apex rounded, emarginate ; base somewhat truncately obtuse or rounded ; upper surface dark green, glabrous or with vestiges of juvenile tomentum, midrib grooved, primary veins about 14 on each side impressed ; under surface white or greyish-white, clothed with a compact woolly indumentum ; petiole about 2·5 cm. long, more or less tomentose, cylindric.

Inflorescence : a compact umbel of many flowers.

Pedicels : stout, about 2 cm. long, white tomentose, obliquely expanded below the calyx.

Calyx : almost obsolete with irregular lobulation, tomentose.

Corolla : ventricose-campanulate, about 5 cm. long, pale yellow or yellowish-white with large purple spots at base and purple striæ, pouched at base ; lobes 8.

Stamens : 16, shorter than corolla ; filaments glabrous.

Pistil : shorter than corolla ; ovary tomentose, 16-chambered ; style glabrous, slender ; stigma large.

Capsule : slightly curved, about 4 cm. long, 1·5 cm. in diameter, more or less tomentose.

Habitat : Manipur ; Japvo and Ching Sow, Naga Hills.

This is an imperfectly known species from Manipur and not in cultivation. Its copious woolly deciduous indumentum distinguishes it from *R. grande*. Its broadly elliptic leaves with rounded base are also noteworthy.

RHODODENDRON PEREGRINUM, *Tagg, sp. nov.*

Illustration—

Habit : a shrub or small tree ; shoots below inflorescences 1 cm. or more in diameter, at first grey scurfy floccose.

Leaves : lamina oblong-elliptic or broadly elliptic, 10-18 cm. long, 5-8 cm. broad ; apex obtuse or shortly acuminate ; base rounded to subcordate ; upper surface light mat green, midrib a prominent yellowish line widening to base and becoming convexly raised ; under surface greenish-grey to buff, clothed with a bistrate indumentum, the upper layer loose, scurfy, more or less detersile, the under layer a thin smooth pellicle, midrib prominent, lateral veins 17-20 on each side slightly raised ; petiole 1·5-2·5 cm. long, clothed with a grey tomentum.

Inflorescence : a lax corymb of 15-20 flowers ; rhachis 3·5 cm. long, silky pubescent.

Pedicels : 3-4 cm. long, whitish-fawn floccose.

Calyx : short, thinly floccose, teeth 6-7, minute, triangular.

Corolla : broadly campanulate, 4·5 cm. long, a soft pink in bud, later white with a faint rose tint outside, inside white with dorsal basal blotches of bright red breaking into lines and spots which extend on the posterior petal to top of corolla tube ; lobes 6-7.

Stamens : 14, unequal, 2-3·5 cm. long, pilose at base ; anthers purple-brown.

Pistil : 3·5-4 cm. long ; ovary 8 mm. long, deep green, glabrous, 7-chambered ; style slightly exceeding the longer stamens, glabrous ; stigma discoid, small for the series.

Capsule :

Habitat : South-Western Szechuan.

R. peregrinum appeared as a rogue among plants of *R. galactinum* under the Wilson seed number 4254 (cf. *R. galactinum*, Falconeri series, p. 246). It is quite distinct from *R. galactinum*, although it resembles that species to some extent in the general look of the foliage. A near ally is *R. Watsonii*, from which it differs in the rounded, subcordate leaf-base, less decurrent lamina, longer and less broad petiole, and different leaf indumentum.

RHODODENDRON PRAESTANS, *Balf. f. & W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 9 (1916), 263.

Illustration—

Habit : a shrub of 20-30 ft. ; inflorescence-bud globose ; outer scales broadly ovate, glutinous, persisting more or less during flowering.

Leaves : subsessile ; lamina oblong-oblanceolate, oblong-obovate, 18-38 cm. long, 7-14 cm. broad, with the broadest part near the apex gradually tapered to the base ; apex rounded, at times emarginate ; base cuneate and decurrent as marginal wings on the petiole ; upper surface dark green, smooth, glabrous, midrib and primary veins impressed ; under surface grey-white to fawn, clothed with a thin skin-like or slightly scurfy indumentum, midrib prominent, primary veins 13-16 on each side ; petiole short, broad, flattish above.

Inflorescence : a racemose umbel of about 15 flowers ; rhachis 3-4 cm. long, slightly tomentose.

Pedicels : 3 cm. long, tomentose, obliquely expanded below calyx.

Calyx : minute, with 8 short teeth, tomentose.

Corolla : oblique-campanulate, 3·5-4·5 cm. long, magenta-rose or flushed that colour with a crimson blotch at base ; lobes 8.

Stamens : 16, 2-2·5 cm. long ; filaments glabrous.

Pistil : about 4 cm. long ; ovary oblong, conoid, 1 cm. long, buff or pinkish-tomentose, 8-11-chambered ; style equalling or shorter than corolla, glabrous.

Capsule :

Habitat : Yunnan ; Kari Pass, Mekong – Yangtze Divide. In open pine forests and shady cliffs at 11,000-13,000 ft. altitude.

This species stands apart from *R. grande* and its immediate allies in its possession of a short broad petiole with decurrent lamina, but in its thin plastered somewhat silvery or fawn indumentum it shows an approach to *R. grande* and *R. sinogrande*. Its allies are *R. coryphaeum* and *R. semnoides*.

RHODODENDRON PROTISTUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 12 (1920), 151.

Illustration—

Habit : a robust shrub or tree of 25-45 ft. ; branches thick, those below inflorescences more than 1 cm. diameter.

Leaves : lamina lanceolate to oblanceolate, 20-45 cm. long, 7-21 cm. broad ; apex obtuse, broadest part about the middle, from there tapered to a cuneate base, very slightly decurrent on petiole ; upper surface dark green, rugulose, glabrous, midrib grooved, primary veins 24-26 on each side impressed ; under surface green, veiled by a thin open cobweb tomentum which does not conceal the epidermis except at the margins of lamina, where it forms a grey-white indumentum, midrib prominent ; petiole 3-5 cm. long.

Inflorescence : a racemose umbel of 20-30 flowers ; rhachis 6 cm. long, cobweb-tomentose.

Pedicels : 1·5-2 cm. long, stout, fawn-tomentose.

Calyx : short, with 8 minute teeth, tomentose like pedicel

Corolla : funnel-campanulate, 5 cm. long, creamy-white, flushed rose ; lobes 8.

Stamens : 16, unequal, 3·5-4·5 cm. long, all shorter than pistil ; filaments glabrous.

Pistil : 4·7 cm. long, a little shorter than corolla ; ovary conoid, 8 mm. long, fawn-pink tomentose, 16-chambered ; style glabrous ; stigma large, discoid.

Capsule : 3·5-4·5 cm. long, 1-1·5 cm. in diameter, rusty-grey tomentose.

Habitat : North-Western Yunnan ; Mekong—Salween Divide. In mixed forests at 10,000-13,000 ft. altitude.

The near relationship of this species to *R. giganteum* is discussed under the latter species. Both are distinguished from typical members of the series by the large funnel-shaped, not ventricose, corolla. The leaves of *R. protistum*, apart from the thin marginal indumentum, appear to be glabrous to the eye but are clothed with very thin cobweb tomentum. Young plants of the species, however, as of *R. giganteum* also, are without indumentum on the leaves.

RHODODENDRON PUDOROSUM, *Cowan* in *Notes R.B.G. Edin.*, vol. 19 (1937), 239.

ILLUSTRATION—

HABIT : a tree 20-40 ft. high ; young branches densely clothed with persisting bud-scales, about 1 cm. diameter.

LEAVES : large, leathery, lamina oblanceolate or oblong, 8-22 cm. long, 3-7 cm. broad ; apex obtuse or rounded, mucronulate ; base rounded or broadly cuneate ; upper surface smooth, pale green, midrib scarcely impressed, primary veins about 16 on either side, conspicuous ; under surface silver grey, clad with an evanescent smooth parchment-like indumentum with minute scattered glands ; petiole robust 2·5-3 cm. long, whitish tomentose, slightly flattened.

INFLORESCENCE : an umbel of 16-24 flowers ; rhachis 3 cm. long, more or less floccose.

PEDICELS : 2-3 cm. long, yellowish tomentose.

CALYX : sub-obsolete, a small fleshy cup, scarcely 2 mm. long, margin faintly lobed.

COROLLA : ventricose-campanulate, 3-3·5 cm. long, mauve-pink with a deep magenta blotch at the base, sparsely floccose ; lobes 6-8, rounded, emarginate, about 1 cm. long, 1·5 cm. broad.

STAMENS : 16, unequal, 1·5-2·5 cm. long ; filaments slender, glabrous.

PISTIL : about 3 cm. long ; ovary ovoid, about 5 mm. long, 4 mm. wide, furrowed, whitish tomentose, eglandular ; style glabrous ; stigma large, lobed.

CAPSULE :

HABITAT : Southern Tibet, Chayul Chu and Tsari Chu. Among Abies and Rhododendrons at 11,000-12,000 ft.

The shaggy appearance of the stems, on account of the persisting bud-scales, is a conspicuous character by which this species is easily distinguished from all others in the Grande Series.

RHODODENDRON SEMNOIDES, *Tagg & Forrest* in *Notes R.B.G. Edin.*, vol. 15 (1926), 116.

ILLUSTRATION—

HABIT : a small tree or shrub 15-20 ft. high ; flowering shoots of the current year 7-10 mm. in diameter, clothed with a buff or greyish tomentum.

LEAVES : lamina oblanceolate, 10-25 cm. long, 4-11 cm. broad ; apex broadly obtuse ; base tapered from broadest part of lamina, rounded or auricled and prolonged as a decurrent margin on upper part of petiole ; upper surface semi-rugulose, a bright mat green, glabrous or with vestiges of a juvenile tomentum ; under surface clothed with a straw or buff-coloured felty indumentum, midrib prominently raised, primary veins raised, 13-16 on each side ; petiole short, 1·5-2·3 cm. long, flat or convex above, 1·5 cm. broad with narrow wings of the semi-decurrent lamina on each side.

INFLORESCENCE : a racemose umbel of 15-20 flowers ; rhachis stout, 2·5-3 cm. long, clothed with a rusty-brown floccose tomentum.

PEDICELS : 3-4 cm. long, expanding abruptly below the calyx, clothed with a thin greyish or buff indumentum.

CALYX : short, oblique, with 8 short triangular teeth clothed with indumentum like that on pedicel.

COROLLA : oblique-campanulate, 4-5 cm. long, white-flushed rose with crimson blotch at base ; lobes 8.

STAMENS : 16, unequal, 2-3·5 cm. long, about equalling corolla tube ; filaments sparsely pubescent at base.

PISTIL : 4·5 cm. long ; ovary oblong-conoid, clad with a buff-pink tomentum, 9-11-chambered ; style stout, glabrous.

CAPSULE : (immature) 3·3 cm. long, 8 mm. in diameter, clad with buff or rust-brown tomentum.

HABITAT : South-Eastern Tibet ; Tsarong, Salween—Kiu chiang Divide. In rhododendron forests at 12,000-13,000 ft. altitude.

This species agrees with *R. praestans* and *R. coryphaeum* in the possession of a short broad petiole and decurrent lamina It has, however, a loose felty light-brown indumentum very different from the thin plastered skin-like indumentum of its allies.

RHODODENDRON SIDEREUM, *Balf. f.* in *Notes R.B.G. Edin.*, vol. 12 (1920), 162.

Illustration—

Habit : a large shrub or tree up to 30 ft. ; flowering shoots about 7 mm. in diameter, clothed with a grey thin agglutinate indumentum, later glabrescent.

Leaves : lamina oblong-elliptic, oblong-oblanceolate, more rarely oblong-lanceolate, 9-23 cm. long (average length about 15 cm.), 3-5 cm. broad ; apex acute or obtuse ; base gradually tapered from broadest part, cuneate and sometimes rounded ; margin slightly recurved ; upper surface slightly rugulose, at maturity glabrous, dark mat green, midrib and primary veins deeply impressed ; under surface silver-grey to fawn clothed with a smooth parchment-like indumentum, midrib prominent, primary veins raised, about 16 on each side ; petiole 1·5-2·5 cm. long, cylindric or slightly flattened above.

Inflorescence : a corymb of 15-20 flowers ; rhachis 5-6 cm. long, greyish floccose.

Pedicels : about 3 cm. long, fawn-tomentose.

Calyx : oblique, very short, with 8 minute teeth, tomentose.

Corolla : ventricose-campanulate, creamy-white to clear yellow with crimson blotch at base, 3-4 cm. long ; lobes 8.

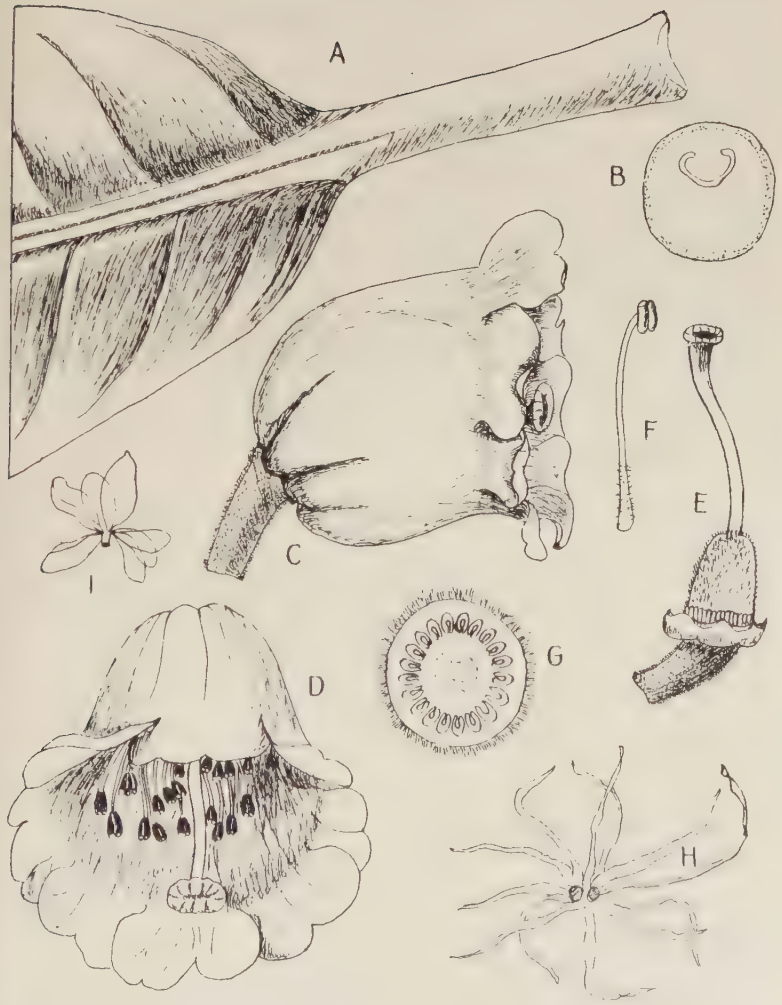
Stamens : 16, unequal, 1·8-3·3 cm. long, longest almost equalling length of corolla tube ; filaments puberulous at base.

Pistil : about 3·5 cm. long, slightly shorter than corolla ; ovary conoid, grooved, densely tomentose with long fasciate hairs with undulate branches, 12-chambered ; style glabrous, expanded below the large discoid stigma.

Capsule : slightly curved, 2·5 cm. long, 1 cm. in diameter, slightly ridged, clothed with a more or less persistent grey to fawn tomentum.

Habitat : North-Eastern Upper Burma and Western Yunnan. In mixed forests at 9000-10,000 ft. altitude.

This represents on the Burmese frontier and in adjoining parts of Yunnan the Himalayan *R. grande*, with which it is very closely allied. Its leaves are smaller and narrower but agree in indumentum. Its flower is somewhat similar. It may prove hardier than *R. grande*. The indumentum at times presents a coppery sheen.



RHODODENDRON SINOGRANDE, *Balf. f. & W. W. Sm.* (Original drawing.)

A. Base of leaf with petiole. B. Section of petiole. C. Corolla and pedicel. D. Corolla showing stamens, style and stigma. E. Pistil. F. Stamen. G. Section of ovary. H. Indumentum hair of leaf under surface, upper stratum. I. Indumentum hair of leaf under surface, lower stratum.

All slightly reduced except G, H and I, which are enlarged.

RHODODENDRON SINOGRANDE, *Balf. f. & W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 9 (1916), 274.

Illustration—*Bot. Mag.*, vol. 148 (1922), t. 8973.

Habit : a tree of 20-30 ft. ; flowering shoots stout, 1·5-2 cm. in diameter, clad with a thin grey indumentum.

Leaves : lamina oblong-oblanceolate or oblong-elliptic, varying in size from 20-70 cm. long, 8-30 cm. broad, broadest part a little above the middle of lamina, from there narrowed gradually to a cuneate or semi-rounded base ; apex obtuse or rounded, sometimes emarginate ; upper surface at maturity glabrescent, rugulose, primary veins about 17 on each side, impressed ; under surface clothed with a silvery grey or fawn skin-like indumentum, midrib prominently raised, thick at base tapering to apex, primary veins raised ; petiole stout, 3-5 cm. long, 1-1·5 cm. broad.

Inflorescence : a racemose truss of about 20 flowers ; rhachis thick, 3-6 cm. long.

Pedicels : stout, 3-5 cm. long, clothed with a dense felty-buff tomentum.

Calyx : a short fleshy expansion of pedicel, clothed with a similar tomentum, fringed with 8-10 very short broad teeth.

Corolla : ventricose-campanulate, 5-6 cm. long, dull creamy-white with crimson blotches at base ; lobes 8-10.

Stamens : 18-20, unequal, 1·5-2·5 cm. long ; filaments puberulous at base.

Pistil : about 5 cm. long ; ovary conoid, about 1 cm. long, densely pink-fawn tomentose, 17-20-chambered ; style glabrous, expanded below the large discoid stigma.

Capsule : large and woody, curved and set obliquely on the enlarged calyx rim, as much as 7 cm. long and 1·7 cm. in diameter, clothed with a rusty to grey tomentum.

Habitat : Western Yunnan ; North-Eastern Upper Burma ; South-Eastern Tibet. In rhododendron forests at 10,000-14,000 ft. altitude.

This is remarkable for its very large leaves. Leaves of young plants in cultivation have exceeded 30 inches in length. Its flowers resemble closely those of *R. grande*, but the pedicels and ovary are eglandular. The northern variety, var. *borcale*, is a better colour, " soft yellow throughout without markings or pale yellow with a crimson blotch at base."

RHODODENDRON WATSONII, *Hemsl. & Wils.* in *Kew Bull.* (1910), 112.

Illustration—

Habit : a shrub of 7-8 ft. ; young shoots stout, those below inflorescences 1-1·5 cm. in diameter, grey-green with scattered flecks of a thin grey or fawn tomentum ; foliage-bud ovoid to conical.

Leaves : subsessile ; lamina obovate, oblong-elliptic or oblanceolate, 15-23 cm. long, 5-10 cm. broad, the broadest part always nearer the obtusely rounded or broadly acuminate apex ; the blade tapers gradually to the base, which is more or less rounded before passing as a decurrent wing into the short broad petiole ; upper surface dark green, shining, slightly rugulose, midrib a conspicuous light-coloured line which widens to the petiole, primary veins 15-19 on each side ; under surface clothed with a thin skin-like silvery-fawn indumentum, midrib prominent and, like the less prominent primary veins, clothed with indumentum.

Inflorescence : a loose corymb of about 15 flowers ; rhachis 3·5 cm. long at the base, clothed with whitish-silky hairs.

Pedicels : about 3 cm. long, thinly tomentose.

Calyx : oblique, short, 7 dentate, thinly tomentose.

Corolla : campanulate, 4 cm. long, white with a crimson blotch at base ; lobes 7.

Stamens : 14, unequal, 1·7-3 cm. long ; filaments densely puberulous.

Pistil : 3-3·5 cm. long, shorter than corolla ; ovary conoid, glabrous, 7 mm. long, 7-chambered ; style glabrous ; stigma small discoid.

Capsule :

Habitat : Western Szechuan. In thin conifer forests at 9000-11,000 ft. altitude.

R. Watsonii is an aberrant member of the series in its glabrous ovary. Its indumentum characters are, however, in accord with those of the series. Its divergence from the typical species of the series may well be explained by its geographical separation ; a parallel is the position of *R. galactinum* in the Falconeri series. Its broad short petiole is characteristic, and this with the different indumentum readily distinguishes it from *R. peregrinum*, which is also an aberrant Szechuan species with a glabrous ovary.

HELIOLEPIS SERIES

General Characters :—Shrubs or trees up to 30 ft. high. Leaves evergreen, very densely scaly below. Inflorescence several-flowered. Flowers violet, mauve or red, often spotted. Calyx very small, scaly. Corolla more or less funnel-shaped, scaly outside. Stamens 10, exserted, pubescent or rarely glabrous. Ovary scaly ; style glabrous or pubescent in the lower part. Capsule medium-sized.

Distribution :—Northern Burma to Kansu.

A fairly homogeneous group of allied species scarcely separable by any definite characters from the *Triflorum* series ; the leaf-scales are, however, usually much more densely arranged than in that series, and the corolla is always scaly outside.

J. H.

KEY TO THE SPECIES

A. Style glabrous, scales on lower surface of leaf usually contiguous or overlapping :

B. Stamens pubescent :

C. Leaves elliptic-lanceolate, reddish below, with more or less equal-sized scales :

D. Scales on lower surface of leaves much overlapping **rubiginosum.**

D. Scales on lower surface of leaves not contiguous **fumidum.**

C. Leaves oblong-elliptic, brown below, with very unequal-sized scales . . . . . **desquamatum.**

B. Stamens glabrous . . . . . **Leclerei.**

A. Style pubescent in the lower part ; scales on lower surface of leaves wide apart or nearly contiguous :

B. Scales on lower surface of leaves wide apart :

C. Style much shorter than the stamens ; leaves narrowed to the base . . . . . **brevistylum.**

C. Style as long as the stamens ; leaves rounded at the base :

D. Style pubescent only at the base ; corolla scaly down one side . . . . . **invictum.**

D. Style pubescent in the lower half ; corolla scaly all over the base . . . . . **heliolepis.**

B. Scales on lower surface of leaf nearly contiguous :

C. Corolla scaly but not pubescent outside . **pholidotum.**

C. Corolla scaly and pubescent outside . . **oporinum.**

RHODODENDRON BREVISTYLUM, *Franch.*

(R. PORROSQUAMEUM, *Balf. f. & Forrest.*)

ILLUSTRATION—

HABIT : shrub up to 10 ft. high ; branchlets purplish, scaly ; leaf-bud-scales early deciduous.

LEAVES : elliptic-lanceolate, acute and mucronate, narrowed to the base, about 4 in. long and 2 in. broad, very laxly scaly and reticulate above, laxly scaly below, the scales about 4-5 times their own diameter apart ; leaf-stalks $\frac{1}{2}$ in. long, scaly.

INFLORESCENCE : terminal, about 5-flowered ; flower-bud-scales early deciduous ; flower-stalks 1 in. long, scaly.

FLOWERS : pale to deep rose, with deep crimson markings.

CALYX : saucer-shaped, undulately lobed, scaly outside.

COROLLA : widely funnel-shaped, $1\frac{1}{2}$ in. long, loosely scaly outside.

STAMENS : 10, slightly exserted, densely *pubescent* in the lower half.

OVARY : densely scaly ; style very short, *pubescent* in the lower half.

CAPSULE :

HABITAT : Yunnan ; Lichiang Range, 12,000-13,000 ft., in open alpine pasture.

RHODODENDRON DESQUAMATUM, *Balf. f. & Forrest.*

(R. CATAPASTUM, *Balf. f. & Forrest*; R. STENOPLASTUM, *Balf. f. & Forrest*; R. SQUARROSUM, *Balf. f.*)

ILLUSTRATION—

HABIT: shrub; branchlets densely scaly; leaf-bud-scales early deciduous.

LEAVES: broadly oblong-elliptic, triangular-acuminate and mucronate, about $3\frac{1}{2}$ in. long, $1\frac{1}{4}$-$1\frac{1}{2}$ in. broad, very densely covered below with flaky unequal-sized scales, the larger ones darker brown; lateral nerves distinct; leaf-stalks $\frac{1}{2}$ in. long, densely scaly.

INFLORESCENCE: terminal, several-flowered; flower-bud-scales early deciduous; flower-stalks $\frac{1}{2}$ in. long, scaly.

FLOWERS: mauve, spotted.

CALYX: very short.

COROLLA: widely funnel-shaped, $1\frac{1}{2}$ in. long, laxly scaly outside.

STAMENS: 10, exserted, *pubescent* towards the base.

OVARY: densely scaly; style *glabrous*.

CAPSULE:

HABITAT: Western Yunnan and Northern Burma, 10,000 ft.

RHODODENDRON FUMIDUM, *Balf. f. & W. W. Sm.*

Illustration—

Habit : shrub about 6 ft. high ; branchlets scaly ; leaf-bud-scales early deciduous.

Leaves : oblong or ovate-oblong, up to 3 in. long, broadly rounded at the base, scaly below, the scales uniform and not contiguous ; leaf-stalks about $\frac{1}{2}$ in. long, covered with red scales.

Inflorescence : racemose-umbellate, 5-7-flowered ; flower-stalks about $\frac{1}{2}$ in. long, densely scaly.

Flowers : dull violet.

Calyx : $\frac{1}{12}$ in. long, lobes broadly triangular, densely scaly outside, more or less ciliate.

Corolla : bell-shaped, about 1 in. long, densely scaly outside.

Stamens : 10, exserted, *hairy* towards the base.

Ovary : densely scaly ; style *glabrous*, shorter than the stamens.

Capsule : $\frac{2}{3}$ in. long, scaly.

Habitat : North-Eastern Yunnan ; about 10,000 ft.

RHODODENDRON HELIOLEPIS, *Franch.*

(R. PLEBEIUM, *Balf. f. & W. W. Sm.*)

ILLUSTRATION—

HABIT: shrub; branchlets scaly; leaf-bud-scales early deciduous.

LEAVES: oblong-elliptic, long-mucronate, rounded at the base, 3-4 in. long, $1\frac{1}{4}$-$1\frac{1}{2}$ in. broad, closely reticulate above, scaly below, the scales about $1\frac{1}{2}$ times their own diameter apart; leaf-stalks $\frac{1}{2}$ in. long, scaly.

INFLORESCENCE: terminal, 4-5-flowered; flower-bud-scales early deciduous; flower-stalks $\frac{1}{2}$ in. long, closely scaly.

FLOWERS: red or rose-coloured.

CALYX: short, $\frac{1}{10}$ in. long, lobes rounded, loosely scaly outside.

COROLLA: widely funnel-shaped, 1 in. long, laxly scaly outside.

STAMENS: 10, slightly exserted, densely *pubescent* in the lower part.

OVARY: densely scaly; style as long as the stamens, *pubescent* in the lower half.

CAPSULE:

HABITAT: Yunnan, 10,000-11,000 ft.

RHODODENDRON INVICTUM, *Balf. f. & Farrer.*

Illustration —

Habit : shrub about 6 ft. high ; branchlets scaly and puberulous ; leaf-bud-scales early deciduous.

Leaves : elliptic or oblong-elliptic, obtuse at the apex, rounded or broadly obtuse at the base, $1\frac{3}{4}$ in. long, 1 in. broad, olive-brown below and covered with discontiguous scales ; leaf-stalks $\frac{1}{3}$ in. long, densely scaly.

Inflorescence : terminal, 2- or more-flowered ; flower-stalks $\frac{1}{4}$ in. long, scaly and puberulous.

Flowers : purple.

Calyx : $\frac{1}{12}$ in. long, densely scaly outside and puberulous, ciliate on the margin.

Corolla : broadly funnel-shaped, scarcely 1 in. long, scaly down the back, otherwise glabrous outside.

Stamens : 10, exserted, *pubescent* towards the base.

Ovary : densely scaly ; style *hairy* at the base.

Capsule : $\frac{1}{2}$ in. long, scaly.

Habitat : Kansu, Siku-Satanee Ranges, 8000-9000 ft., in alpine coppice.

RHODODENDRON LECLEREI, *Lév.*

Illustration—

Habit: shrub; branchlets scaly; leaf-bud-scales early deciduous.

Leaves: lanceolate, acute, 2-2½ in. long, ¾-1 in. broad, glabrous and reticulate above, densely covered below with contiguous or slightly overlapping equal-sized scales; lateral nerves not evident; leaf-stalks ½ in. long, densely scaly.

Inflorescence: terminal, several-flowered; leaf-bud-scales subpersistent; flower-stalks ⅓ in. long, scaly.

Flowers: blue.

Calyx: very small, scaly outside.

Corolla: widely funnel-shaped, scarcely scaly outside, ¾ in. long.

Stamens: 10, slightly exserted, *glabrous*.

Ovary: densely scaly; style *glabrous*, longer than the stamens.

Capsule:

Habitat: Yunnan, high plateau of Ta-Hai-Tse, about 10,000 ft.

RHODODENDRON OPORINUM, *Balf. f. & Ward.*

ILLUSTRATION—

HABIT : shrub ; branchlets scaly ; leaf-bud-scales early deciduous.

LEAVES : broadly lanceolate or oblong-lanceolate, long-apiculate at the apex, obtuse but hardly narrowed at the base, about 3 in. long and $1\frac{1}{4}$ in. broad, pale rusty below and covered with almost contiguous scales ; leaf-stalks $\frac{2}{3}$ in. long, scaly and slightly hairy.

INFLORESCENCE : terminal, about 6-flowered ; flower-stalks $\frac{3}{4}$ in. long, scaly.

FLOWERS : rose-pink with a dark red patch at the base of the corolla.

CALYX : $\frac{1}{12}$ in. long, densely scaly outside, more or less ciliate.

COROLLA : campanulate, about 1 in. long, scaly all over the outside and puberulous.

STAMENS : 10, $\frac{3}{4}$ in. long, *villous* towards the base.

OVARY : densely scaly ; style *pubescent* at the base.

CAPSULE :

HABITAT : Eastern Upper Burma, Wulaw Pass, 11,000-12,000 ft., open ridges.

RHODODENDRON PHOLIDOTUM, *Balf. f. & W. W. Sm.*

Illustration—

Habit : shrub up to 8 ft. high ; branchlets purplish, scaly ; leaf-bud-scales early deciduous.

Leaves : ovate-elliptic, acute, rounded at the base, 2-2½ in. long, 1-1¼ in. broad, impressed-reticulate above, scaly below, the scales about half their own diameter apart ; lateral nerves slightly conspicuous ; leaf-stalks ½ in. long, scaly.

Inflorescence : terminal, shortly racemose, about 5-flowered ; flower-bud-scales early deciduous ; flower-stalks ½ in. long, laxly scaly.

Flowers : rose to rose-purple, spotted.

Calyx : short, densely scaly outside.

Corolla : widely funnel-shaped, 1¼ in. long, densely scaly outside.

Stamens : 10, shortly exserted, densely *villous* in the lower half.

Ovary : scaly ; style short, *pubescent* towards the base.

Capsule :

Habitat : Northern Yunnan, 10,000-12,000 ft., open situations amongst scrub.

RHODODENDRON RUBIGINOSUM, *Franch.* Flowers mauve spotted with brown.

A. Lower surface of leaf. B. Stamen. C. Calyx and pistil. (After *Bot. Mag.*)

RHODODENDRON RUBIGINOSUM, *Franch.*

Illustration—Hook. f. *Bot. Mag.*, t. 7621 (1898).

Habit : shrub or tree up to 30 ft. high ; branchlets scaly, purplish ; leaf-bud-scales early deciduous.

Leaves : elliptic-lanceolate, acutely acuminate, about $2\frac{1}{2}$ in. long and 1 in. broad, very densely covered below with rust-coloured much overlapping scales ; leaf-stalks $\frac{1}{2}$ in. long, scaly.

Inflorescence : terminal, 4-8-flowered ; flower-bud-scales early deciduous ; flower-stalks $\frac{1}{2}$ in. long, densely scaly.

Flowers : mauve, spotted with brown.

Calyx : very short, undulately lobed, scaly outside.

Corolla : funnel-shaped, $1\frac{1}{4}$ in. long, scaly outside, especially on the lobes.

Stamens : 10, slightly exserted, *pubescent* towards the base.

Ovary : densely scaly ; style *glabrous*.

Capsule :

Habitat : Yunnan, 7500-11,000 ft., open situations in forests.

IRRORATUM SERIES

The series Irroratum is one of the largest. Its centre is in Western Yunnan with branches into the Bhutan Himalaya, Northern Burma, Manipur, South-Eastern Tibet, Eastern Yunnan and the borders of Szechuan and Kweichow.

The outstanding characters of the series are:—the dominance of the shrub habit; the typical leaf is more or less lanceolate with an acute apex, although there are several exceptions; the leaf margin is cartilaginous and often obscurely notched and rough to the touch; the indumentum is fugitive, and at maturity of foliage normally absent, leaving only traces in the form of minute punctulations; the indumentum is more evident in the subseries Parishii, where it is stellate; the truss is rounded, recalling that of the series Arboreum, but much less compact; the calyx is usually very small, often a mere rim; the corolla is rarely other than tubular and rarely other than 5-partite; spotting is usually prominent; the series is not conspicuously glandular to the touch, but few of the species are completely eglandular.

Two series, Arboreum and Fortunei, invite contrast with Irroratum. Its closest association is with Arboreum. While the latter has attained in the main a tree development in the Himalaya, the shrub formation is dominant for Irroratum in Yunnan. But evidence of close alliance can be seen in the form and character of the foliage and in the structure of truss and flower. It is only from the subseries Arboreum that discrimination is necessary, and that subseries is meagre in specific types, whereas Irroratum is comparatively profuse. In a general way the series Fortunei is readily distinguished from Irroratum by the characteristic leaves rounded at both ends and of a more pliable texture, by the globular leaf-bud, by the open truss, by the frequency of 7-partite flowers, and the rarity of distinct spotting; but relation between the two series is indicated by the general tendency to lack of indumentum, to the prevalence of glands especially on the ovary and even to the tip of the style, and in the occasional occurrence in Irroratum of leaves with rounded ends and of flowers with 6-7-partite corollas. A few species in the series suggest linkage with Thomsonii and with Neriiflorum, but that obscurely.

The series falls naturally into two subseries—Irroratum and Parishii. The latter subseries is very distinct, and may not unfairly be regarded as a separate series. Its leaves, usually

blunt or rounded at the apex, have a fugitive stellate indumentum not paralleled elsewhere in Irroratum nor in the allied series; the leaves, moreover, are of large size and of softer texture than those of typical Irroratum; the flowers are fleshy and the prevalent colour is red; the ovary and style are tomentose and sometimes glandular as well, generally to the tip of the style. The subseries may be considered as a development of the series with its centre in the wet monsoon-forest area of Upper Burma.

In the majority of the subseries Irroratum indumentum is absent at maturity. The chief exception to this is *R. agastum* and its two allies *R. leptopeplum* and *R. pennivenium*, which have a thin veil of subpersistent indumentum reminiscent of the series Arboreum. As pointed out above, there is between Irroratum and Arboreum a distinct affinity, and this is strongly in evidence when the position of *R. agastum* and its allies are reviewed.

For the analysis of the main part of the series, useful criteria have been found in the characters of the ovary and style. There is a marked division between a group with glabrous ovary and style and a group with glandular ovary and style. The glandularness is usually emphasised by the style being glandular to the tip. (An interesting parallel is seen in the series Fortunei, and is an indication of a certain degree of linkage with that series.) There is a third small group with tomentose ovary and glabrous style.

It may be noted that the Bhutanese species in particular and some of the other outliers show, as is natural, some divergence in aspect from those of Western Yunnan. Even within the latter region certain species such as *R. eritimum* deviate from the typical Irroratums in their blunt leaves and tendency to 6-7-partite flowers. In such species may be seen a further hint of affinity with members of the Fortunei series.

KEY TO THE SUBSERIES

A. Indumentum of mature leaf none or, if present, thin, not stellate.
  Leaf apex acute or abruptly acuminate, rarely rounded.
  Ovary never with stellate indumentum.
  Style glabrous or glandular, never (except in *R. pogonostylum*) floccose or tomentose . . . . . **Irroratum.**

AA. Indumentum stellate, always present on young leaves, always more or less detersile.
  Leaf-apex more or less rounded.
  Ovary always with stellate or floccose indumentum.
  Style more or less stellate-floccose . . . **Parishii.**

H. F. T.

IRRORATUM SERIES

SUBSERIES IRRORATUM

The characters of the subseries are discussed in the introduction to the series.

KEY TO THE SPECIES

A. Indumentum none at maturity (or obscure in *R. papillatum* and *R. epapillatum*).
Ovary glabrous, tomentose or glandular:
B. Ovary always more or less glandular, never glabrous.
Style never glabrous except in *R. papillatum* and *R. epapillatum*:
C. Style densely glandular to tip:
D. Corolla tubular or funnel-campanulate:
E. Leaves lanceolate, petioles and pedicels with short-stalked simple glands:
F. Pedicels more or less 2·5 cm. . . . **irroratum.**
FF. Pedicels more or less 1 cm.:
G. Corolla much spotted . . . **pogonostylum.**
GG. Corolla without spots or blotch . **ningyuenense.**
EE. Leaves oblanceolate, petioles and pedicels setose-glandular . . . . . **mengtszense.**
DD. Corolla more or less cupular:
E. Corolla very small, 2·5 cm.
Pedicels 2-2·5 cm. long.
Leaves elongate-lanceolate . . . **Annae.**
EE. Corolla large, 4 cm.
Pedicels 2-3 cm. long.
Leaves broadly oblanceolate . . **laxiflorum.**
EEE. Corolla large, 4 cm.
Pedicels 3-4 cm. long.
Leaves narrowly lanceolate . . . **Hardingii.**
CC. Style glabrous (rarely a few glands):
D. Leaves oblong to oval.
Calyx small, 2-3 mm. long.
Corolla 3·5 cm. long, pale cream, pink spotted **papillatum.**
DD. Leaves oblanceolate.
Calyx large, 4 mm.
Corolla large, 5·5 cm., pale pink . **epapillatum.**
BB. Ovary more or less pubescent or tomentose, but not glandular.
Style glabrous, except *R. dimitrum*:
C. Style glabrous, calyx small, 1-2 mm. long:
D. Flowers red to deep crimson:

E. Leaves narrow, lanceolate.
Apex long acuminate.
Nervation obscure above . . . **Kendrickii.**
EE. Leaves oblanceolate.
Apex shortly acuminate.
Nervation obscure above . . **spanotrichum.**
EEE. Leaves broadly lanceolate.
Apex shortly acuminate.
Nervation conspicuous on both sides **ombrochares.**
DD. Flowers rose with few or no markings **cerochitum.**
DDD. Flowers white to pink, more or less spotted **araiophyllum.**
CC. Style tomentose.
Calyx very large, as much as 9 mm. long . **dimitrum.**
BBB. Ovary glabrous, never glandular.
Style always glabrous:
C. Flowers 6-7-lobed.
Under surface of leaf mat, more or less glaucous.
Epidermis papillate:
D. Leaves oblong.
Apex blunt to rounded . . . . **eritimum.**
And following subspecies:—
heptamerum. **gymnogynum.**
chawchiense. **persicinum.**
DD. Leaves lanceolate to oblanceolate.
Apex acute, pointed . . . **anthosphaerum.**
And the subspecies **R. hylothreptum.**
CC. Flowers 5-lobed.
Under surface of leaf more or less shining.
Epidermis epapillate:
D. Leaves wax-coated, becoming glossy when warmed.
Corolla rose, of thin texture . . **lukiangense.**
And following subspecies:—
admirabile. **ceraceum.**
adroserum. **gymnanthum.**
DD. Leaves not wax-coated, unaltered when warmed.
Corolla deep crimson, fleshy:
E. Calyx minute, 1-2 mm. . . . **tanastylum.**
EE. Calyx large, more or less equalling ovary **Shepherdii.**
AA. Indumentum thin, but more or less persistent at maturity.
Ovary more or less glandular:
B. Leaf-apex more or less rounded.
Style glandular . . . . . **agastum.**
BB. Leaf-apex more or less pointed.
Style glabrous:
C. Calyx about 5 mm. long.
Ovary glandular, not tomentose . . **leptopeplum.**
CC. Calyx 1-2 mm. long.
Ovary tomentose and glandular . . **pennivenium.**

RHODODENDRON AGASTUM, *Balf. f. & W. W. Sm.* in *Trans. Bot. Soc. Edin.*, vol. 27 (1917), 178.

Illustration—

Habit : a shrub of 10-20 ft. with thick branches ; young shoots thinly floccose and more or less glandular, older branches glabrescent ; shoots below inflorescences about 5 mm. diameter.

Leaves : lamina oblong to oblong-elliptic or oblong-obovate, 6-12·5 cm. long, 2-4·5 cm. broad ; apex broadly obtuse, rounded ; base obtuse to rounded ; upper surface at maturity mat and glabrescent (unfolding leaves loosely floccose and sparsely glandular above), midrib deeply grooved, primary veins about 15 on each side slightly impressed ; under surface pale olive to fawn, clad with a thin film-like or somewhat scurfy indumentum, midrib prominently raised, primary veins raised and conspicuous ; petiole 1·5-2 cm. long, slightly grooved, clad with vestiges of short glands and floccose hairs.

Inflorescence : a racemose umbel of about 20 flowers ; rhachis 2-2·5 cm. long, glandular and thinly floccose.

Pedicels : about 1·5 cm. long, densely clad with short glands.

Calyx : about 3 mm. long ; lobes 5-7, glandular and gland-fringed.

Corolla : tubular-campanulate, about 5 cm. long, rose-coloured, marked with a basal crimson blotch which may break into lines and spots ; lobes 5-7, rounded, 2 cm. long, 2 cm. broad, emarginate.

Stamens : 10-14, unequal, 2·7-3·7 cm. long ; filaments pubescent at base.

Pistil : 4-5 cm. long ; ovary cylindric, conoid, 10-chambered, about 6 mm. long, densely clad with short clavate glands and fewer strigose hairs ; style stout, glandular to the tip or for some length from the base ; stigma discoid, about 3 mm. across.

Capsule :

Habitat : Western Yunnan ; Taping-pu and Yangpi Valleys. In oak and pine forests at 6000-9000 ft. altitude.

This species deviates from the general appearance of the Irroratums in the rounded leaf-apex and in the presence of a thin indumentum. The leaf shape consequently recalls that of Fortunei while the texture and indumentum point to Arboreum. It may be regarded as a somewhat peculiar Irroratum linking the species of the Irroratum series with those of the Arboreum series.

RHODODENDRON ANNAE, *Franch.* in *Journ. de Bot.*, vol. 12 (1898), 258.

Illustration—

Habit : a shrub of 4-6 ft. ; young shoots thinly floccose and more or less glandular ; branches below inflorescences 4 mm. diameter.

Leaves : lamina rigid, leathery, narrow elongate-lanceolate, 7-11 cm. long, 1·5-3 cm. broad ; apex acute or acuminate ; base obtuse ; upper surface bright green, mat, smooth, glabrous at maturity, midrib deeply grooved, primary veins 14 on each side slightly impressed ; under surface paler, glabrous at maturity, minutely punctulate, midrib slightly raised, primary veins not conspicuous ; petiole about 1-2 cm. long, glabrescent.

Inflorescence : a racemose umbel of about 10 flowers ; rhachis about 2·5 cm. long, floccose and glandular.

Pedicels : 2-2·5 cm. long, densely glandular and sparsely floccose.

Calyx : minute, 1-2 mm. long, densely glandular, rim undulate, lobes broadly rounded or angular, gland-fringed.

Corolla : cup-shaped or openly campanulate, about 2·5 cm. long, creamy-white flushed more or less rose, purple spotted, split for $\frac{1}{3}$-$\frac{1}{2}$ its length into 5 lobes ; lobes 1-1·5 cm. long, 1·5 cm. broad, emarginate.

Stamens : 10, unequal, 1-2 cm. long ; filaments glabrous.

Pistil : about 2-2·5 cm. long ; ovary 5 mm. long, conoid, grooved, densely glandular ; style densely glandular to tip with short-stalked glands.

Capsule :

Habitat : Kweichow. At 4500 ft. altitude.

This ally of *R. irroratum* comes from the Kweichow province, considerably to the east of the main centre of the series. Its leaves resemble those of *R. irroratum* but are more oblong, while its pale rose flowers are small and cup-shaped. It has flowered in character in at least one English garden.

RHODODENDRON ANTHOSPHAERUM, *Diels* in *Notes R.B.G. Edin.*, vol. 5 (1912), 215 ; *Balfour* in *Trans. Bot. Soc. Edin.*, vol. 27 (1917), 181.

Illustration—*Bot. Mag.*, vol. 151 (1925), t. 9083.

Habit : a shrub or small tree of 20-30 ft. ; young branches clad with rufous clavate glands and hairs, older branches glabrescent.

Leaves : lamina broadly lanceolate or oblanceolate, 8-14 cm. long, 2·5-5 cm. broad ; apex acute, margin undulate ; base obtuse ; upper surface glabrous but with vestiges of hairs and glands, midrib slightly grooved, primary veins 18 on each side grooved ; under surface pale, mat, thinly clad with scattered withered hairs, epidermis minutely papillose, midrib prominent, primary veins not very conspicuous ; petiole about 2 cm. long, stout, grooved above, clad with vestiges of glands and hairs.

Inflorescence : a racemose umbel of about 12 flowers ; rhachis about 1 cm. long, floccose.

Pedicels : 1-1·5 cm. long, clad with floccose hairs and glands.

Calyx : minute, cupular, about 1 mm. long, floccose and glandular ; lobes minute, deltoid.

Corolla : tubular-campanulate, 4-5 cm. long, rose-magenta with a few markings of dark crimson and a basal black-crimson blotch, puberulous inside ; lobes 5-7, 2 cm. long, 2-2·5 cm. broad, rounded, emarginate, crenulate.

Stamens : 10-14, unequal, 3-4 cm. long ; filaments glabrous or more or less puberulous at base.

Pistil : 4 cm. long ; ovary about 6 mm. long, conoid, glabrous or sparsely clad with short hairs, 8-chambered ; style glabrous throughout expanding into the lobulate stigma.

Capsule :

Habitat : North-Western Yunnan, Sungkwei Pass. Open situations in pine forests at 10,000-11,000 ft. altitude.

This is allied to *R. critimum* but in foliage is much more like typical *R. irroratum*. The corolla is usually 6-7-partite, and the ovary sometimes not quite glabrous. **R. hylothreptum**, *Balf. f. & W. W. Sm.*, may be included here as a subspecies. It differs from the type *R. anthosphaerum* in the narrower and smaller leaves and in the consistently 7-lobed corolla with conspicuous spotting on the posterior side.

RHODODENDRON ARAIOPHYLLUM, *Balf. f. & W. W. Sm.* in *Trans. Bot. Soc. Edin.*, vol. 27 (1917), 184.

Illustration—

Habit : a slender-branched shrub of 9-16 ft. ; young branches more or less white-floccose or glabrescent.

Leaves : lamina lanceolate, 5-11·5 cm. long, 2-3 cm. broad ; apex acuminate ; margin undulate, not roughened ; base cuneate ; upper surface glaucous mat, smooth, glabrous except for vestiges of flocks, midrib grooved, primary veins about 15 on each side inconspicuous ; under surface paler glabrous, midrib prominent, glabrescent with vestiges of a juvenile woolly tomentum, primary veins raised ; petiole 1 cm. long, glabrescent.

Inflorescence : a racemose umbel of 8 flowers ; rhachis 1·5 cm. long, more or less clad with floccose hairs.

Pedicels : about 1·5 cm. long, slender, glabrous or with few floccose hairs.

Calyx : minute, cupular, fleshy, about 1·5 mm. long, glabrous ; lobes 5, semilunate or ovate, outside glabrous, margin ciliate.

Corolla : openly campanulate to cup-shaped, about 3·5 cm. long, white or white suffused rose outside and with a basal crimson blotch and few or many crimson spots within ; lobes 5, about 1·4 cm. long, 2 cm. broad, rounded, emarginate, subcrenulate.

Stamens : 10, unequal, 1·4-2·8 cm. long ; filaments densely pubescent at base.

Pistil : about 2·8 cm. long ; ovary conoid, about 5·5 mm. long, more or less clad with short white adpressed hairs ; style glabrous, slightly expanding into the lobulate stigma.

Capsule : narrow, oblong-cylindric, straight or very slightly curved, 1-1·5 cm. long, 4 mm. broad, brownish, wrinkled, glabrous, 5-6-chambered.

Habitat : Western Yunnan ; Shweli—Salween Divide. In mixed forests and thickets at 9000-10,000 ft. altitude.

This is one of the best of the Irroratums. Its neat foliage gives it a graceful appearance. It deviates from the general run of the Irroratums in its cupular flower and in the character of its tomentose ovary. It is quite an eglandular species. The young revolute leaves are floccose outside and have a densely woolly midrib.

RHODODENDRON CEROCHITUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 36.

ILLUSTRATION—

HABIT : a shrub or small tree of about 20 ft. ; young shoots at first sparsely floccose, later glabrescent ; branches below inflorescences about 4 mm. diameter.

LEAVES : lamina lanceolate to oblong-lanceolate or oblong, 7-12 cm. long, 2·5-4·5 cm. broad ; apex abruptly acuminate ; base obtuse or broadly cuneate ; upper surface mat, glaucous, midrib grooved, primary veins about 20 on each side not conspicuous ; under surface pale, somewhat glossy, at maturity glabrous, epapillate, punctulate with the bases of fallen hairs particularly on the prominent midrib and primary veins ; petiole about 1·5 cm. long, glabrescent.

INFLORESCENCE : a racemose umbel of about 7 flowers ; rhachis 1-1·5 cm. long, glaucous.

PEDICELS : about 8 mm. long, glaucous, glabrous or very sparsely floccose.

CALYX : small, 1-2 mm. long, with 5 pointed teeth, floccose fimbriate on the margin.

COROLLA : funnel-campanulate, 5 cm. long, fleshy, with 5 basal nectar pouches, rose, with or without a few deeper markings ; lobes 5, 1·5 cm. long, 2 cm. broad, emarginate, more or less crenulate.

STAMENS : 10, unequal, 3-4 cm. long ; filaments slender, puberulous at the base.

PISTIL : about 5 cm. long ; ovary conoid-cylindric, about 7 mm. long, sparingly floccose ; style slender, glabrous ; stigma small.

CAPSULE :

HABITAT : Western Yunnan ; Shweli—Salween Divide. In rhododendron and pine forests at 10,000-11,000 ft. altitude.

This is somewhat intermediate between the allied *R. ombrochares* and *R. tanastylum*. It has, however, rose-coloured flowers, a slightly hairy ovary, and a more glaucous upper surface to the leaf.

RHODODENDRON DIMITRUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 50.

Illustration—

Habit: a shrub 6-7 ft. with short straight branches about 2·5 mm. diameter, glabrescent when a year old.

Leaves: lamina leathery, oblong or oval-oblong, 4-7 cm. long, 1·5-2·5 cm. broad; apex abruptly acuminate; margin recurved; base obtuse; upper surface convex, mat, glaucous, at maturity glabrescent, midrib grooved; under surface yellowish green, glabrous, midrib prominent, primary veins about 12 on each side slightly raised; petiole 1 cm. long, grooved above, glabrescent with traces of floccose hairs.

Inflorescence: a short raceme of 10-12 flowers; rhachis about 1 cm. long, more or less floccose-pubescent.

Pedicels: about 1 cm. long, densely floccose-pubescent, eglandular.

Calyx: about 1 cm. long, oblique, split in front to near the base, cup-shaped, fleshy and floccose at base; lobes 5, unequal, 2-7 mm. long, pink and more or less spotted, triangular or ovate or oblong, fringed at margin, often deciduous, leaving the basal cup as a toothed rim.

Corolla: tubular-campanulate, deep rose with crimson spots, 4 cm. long, fleshy, puberulous inside, glabrous outside; lobes 5, rounded, emarginate, about 1·5 cm. long, 1·8 cm. broad.

Stamens: 10, unequal, 2·2-3·2 cm. long; filaments puberulous at base.

Pistil: about 3·5 cm. long; ovary 6 mm. long, narrow cylindric, truncate, densely clad with fasciate hairs; style floccose with similar hairs to above middle, at times fewer-stalked glands intermixed; stigma not much broader than style.

Capsule:

Habitat: Mid-Western Yunnan; western flank of the Tali Range. In open thickets at 10,000 ft. altitude.

This is an aberrant species touching Irroratum in some respects and reminiscent of the series Neriiflorum in others. Its foliage characters and its rose crimson-spotted corolla favour the former series. The large calyx, unusual in the Irroratums, is more in keeping with the Neriiflorum series.

RHODODENDRON EPAPILLATUM, *Balf. f. & Cooper* in *Notes R.B.G. Edin.*, vol. 13 (1922), 257.

Illustration—

Habit : small tree of about 17 ft. ; branches below inflorescences about 6 mm. diameter ; young shoots more or less glandular.

Leaves : lamina oblanceolate to oblong-obovate, 8-13 cm. long, 2·5-4 cm. broad ; apex blunt or semi-rounded ; base obtuse to cuneate ; upper surface mat, at maturity glabrous, midrib deeply grooved, primary veins about 16 on each side very slightly impressed ; under surface pale, very thinly veiled with detersile indumentum, epidermis not papillate, not punctulate, midrib prominent, primary veins distinctly raised ; petiole about 1·5-2 cm. long, glabrescent.

Inflorescence : a racemose umbel of about 10 flowers ; rhachis 3 cm. long, sparsely glandular and hairy.

Pedicels : about 2 cm. long, sparsely glandular and floccose.

Calyx : distinct, 3-4 mm. long, cup-like, glandular ; lobes 5, broad, rounded, fimbriate.

Corolla : tubular-campanulate, 5-5·5 cm. long, pale rose with deeper tinted spots and a faint blotch at base, glabrous inside and outside ; lobes 5, rounded, 1·5 cm. long, 2·5 cm. broad, emarginate.

Stamens : 10, unequal, 3-4 cm. long ; filaments glabrous.

Pistil : 5-5·5 cm. long ; ovary conoid, clad with glands and fewer fasciate hairs, 6 mm. long ; style glabrous or very sparingly sprinkled with glands.

Capsule :

Habitat : Bhutan ; Chukka Timpu. At 6000 ft. altitude.

The leaves of this species, like those of its ally *R. papillatum*, have a very thin film-like indumentum which does not conceal the smooth epidermal surface. Apart from the difference suggested by the name, viz. the absence of papillae, *R. epapillatum* differs from its ally in the blunt oblanceolate leaves and in the much larger calyx. Knowledge of both species is confined to the original collections of Cooper.

RHODODENDRON ERITIMUM, *Balf. f. & W. W. Sm.* in *Trans. Bot. Soc. Edin.*, vol. 27 (1917), 190.

Illustration—

Habit : a shrub or small tree of about 18 ft. ; young shoots thinly floccose, finally glabrous, branches below inflorescences about 6 mm. diameter.

Leaves : lamina leathery, narrowly oblong or oblong-oblanceolate, 9-17 cm. long, 2-4·5 cm. broad ; apex blunt, subrounded, mucronulate, margin somewhat revolute ; base obtuse or cuneate ; upper surface mat, glabrous, midrib grooved, primary veins about 20 on each side slightly grooved ; under surface mat, glaucous, papillate and punctulate with minute dots, midrib raised, sparsely floccose, primary veins not prominent, thinly and sparsely floccose ; petiole about 1 cm. long, glabrescent with vestiges of floccose hairs.

Inflorescence : a racemose umbel of about 15 flowers ; rhachis hardly 1 cm. long, rufously floccose.

Pedicels : about 8 mm. long, sprinkled with floccose hairs.

Calyx : minute, 1-2 mm. long, glabrous ; lobes 7, ovate or triangular, margin subfimbriate.

Corolla : tubular-campanulate, about 4 cm. long, dark crimson or a lighter rose-magenta, blotched at base but not conspicuously spotted, glabrous outside and inside ; lobes 7, rounded, 1·3 cm. long, 1·6 cm. broad, emarginate, subcrenulate.

Stamens : 14, unequal, 2-3·3 cm. long ; filaments glabrous.

Pistil : about 3·5 cm. long ; ovary cylindric, narrow, 5 mm. long, glabrous ; style glabrous, slender, very slightly expanding below the small stigma.

Capsule : 1·5-2 cm. long, 6 mm. broad, cylindric-oblong blackish, glabrous and somewhat ribbed, 7-chambered.

Habitat : Yunnan ; mountains of the Chungtien Plateau. In open thickets at 9000 ft. altitude.

This species departs from the general facies of the typical Irroratums in the blunt to rounded apex of the leaf and in the 6-7-partite corolla. It shows considerable variation in foliage and colour of flower. The following subspecies, differing in minor points, may well be included within *R. eritimum*.

SUBSPECIES OF RHODODENDRON ERITIMUM

R. chawchiense, *Balf. f. & Farrer* in *Notes R.B.G. Edin.*, vol. 13 (1922), 247.

A form from the Chawchi Pass with smaller flowers of a blue-magenta colour.

R. gymnogynum, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 47.

A form with leaves smaller than the type. Flowers crimson. Shweli—Salween Divide.

R. heptamerum, *Balf. f.* in *Notes R.B.G. Edin.*, vol. 13 (1920), 48.

A south-west form from the N'Maikha—Salween Divide and the Burmese border. Flowers large and of a deep crimson colour with few markings.

R. persicinum, *Hand.-Mazz.* in *Anz. Akad. Wiss. Wien*, vol. 60 (1924), 97.

A light-flowered subspecies (peach-bloom colour or rose) from the hills between Tali and Hoching. The leaves are smaller and more acutely pointed than typical *R. eritimum*.

RHODODENDRON HARDINGII, *G. Forrest, sp. nov.*

Illustration—

Habit : a shrub of 6-8 ft. ; young shoots at first glandular and sparse floccose. (Unfolding leaves glandular and sparsely floccose.)

Leaves : lamina rigid, lanceolate, 6-8·5 cm. long, 1·5-2·5 cm. broad ; apex acute ; margin undulate, slightly recurved, somewhat roughened with the bases of fallen marginal glands ; base cuneate ; upper surface mat, at maturity glabrous, midrib deeply grooved, primary veins 12-14 on each side impressed ; under surface pale, at maturity glabrous, midrib prominent, primary veins slightly raised ; petiole at first glandular, later glabrescent, about 1 cm. long.

Inflorescence : a lax corymb of 8-12 flowers ; rhachis 3-3·5 cm. long, glabrous or very slightly glandular.

Pedicels : 3-4 cm. long, densely glandular.

Calyx : about 2 mm. long, glandular and gland-fringed.

Corolla : cup-shaped or very openly campanulate, 3-4 cm. long, white more or less flushed rose-pink, deepest in bud, more or less spotted crimson on the large posterior lobe ; lobes 5, unequal, 1·5-2 cm. long, 2-2·5 cm. broad, emarginate.

Stamens : 10, 2-2·5 cm. long ; filaments glabrous.

Pistil : 3-3·5 cm. long ; ovary conoid, 6 mm. long, slightly tomentose at the base, elsewhere glandular ; style glandular to the tip and dilated below the sub-discoid stigma.

Capsule : oblong-cylindric, blunt, about 2 cm. long, 8 mm. broad, straight or very slightly curved, blackish, roughened with withered glands, 8-10-chambered.

Habitat : North-Western Yunnan ; south of Tengyueh. On margins of open forests at 7000 ft. altitude.

This is admittedly very near to *R. laxiflorum*, but comes from an area much further south and differs in the narrow lanceolate leaves and longer pedicels resulting in a very open truss. The flowers, which vary in the amount of spotting, are much larger than those of *R. Annae*. In grace it may rival *R. araiophyllum*.

RHODODENDRON IRRORATUM, *Franch.* (Copied from *Bot. Mag.*, t. 7361.)

A. Flowering shoot (about ⅔ natural size). B and C. Anthers. D. Section of ovary. E. Pistil.

B, C and D enlarged.

RHODODENDRON IRRORATUM, *Franch.* in *Bull. Soc. Bot. France*, vol. 34 (1887), 280.

ILLUSTRATIONS—*Bot. Mag.*, vol. 120 (1894), t. 7361 ; *Gard. Chron.*, vol. 40, 3rd ser. (1911), 350.

HABIT : a shrub or small tree as much as 25 ft. high ; young shoots thinly tomentose and clad with short-stalked glands which soon wither.

LEAVES : lamina rigid, leathery, lanceolate or oblanceolate or narrowly elliptic, 5-12 cm. long, 1·5-3 cm. broad ; narrowed to both ends, apex acute, margin more or less undulate and somewhat roughened ; base obtuse or cuneate ; upper surface pale green, at first glandular and floccose, later glabrescent, midrib deeply grooved, primary veins about 12-16 on each side deeply impressed ; under surface paler, at maturity to the eye glabrous, epapillate, midrib prominently raised ; petiole 1·5-2 cm. long, distinctly grooved, at maturity glabrescent.

INFLORESCENCE : a lax racemose umbel of about 15 flowers ; rhachis 1·5-3 cm. long, rufously-glandular.

PEDICELS : 1·5-2·5 cm. long, densely glandular with short clavate glands.

CALYX : small, about 2 mm. long, densely glandular ; lobes 5, rounded or broadly triangular, gland-fringed.

COROLLA : tubular-campanulate, 3-5 cm. long, white or creamy yellow, often suffused a pale or deeper rose colour with many or few crimson or greenish spots, 5 nectar pouches at base, outside more or less glandular ; lobes 5, rounded, emarginate, about 2 cm. long, 2·5-4 cm. broad.

STAMENS : 10, unequal, 2·5-3·5 cm. long ; filaments finely puberulous at base.

PISTIL : 3·5-4·5 cm. long ; ovary conoid, about 5 mm. long, densely glandular ; style glandular to the tip ; stigma small.

CAPSULE : oblong-cylindric, 2·5-3 cm. long, 8 mm. broad, purplish-brown, grooved, warted by the withered glands, 8-10-chambered.

HABITAT : Mid-West Yunnan ; dominant in the Sung-Kwei Pass. In shady pine and rhododendron forests at 9000-10,000 ft. altitude.

This is the central species of a large series and has itself a wide distribution in Yunnan. It and its nearest allies, six in number, are characterised by the style being glandular to the tip. They have also usually light-coloured flowers, not deep red nor fleshy. *R. irroratum* in some of its forms has yellowish flowers—most unusual in the series.

RHODODENDRON KENDRICKII, *Nutt.* in *Mag. Nat. Hist.*, vol. 12 (1853), 10; *id.* in *Hook. Journ. Bot.*, vol. 5 (1853), 358.

ILLUSTRATION—(var. *latifolium*) *Bot. Mag.*, vol. 85 (1859), t. 5129.

HABIT: a shrub or small tree of 15-25 ft., of spare habit.

LEAVES: lamina leathery, oblong-lanceolate or lanceolate-acuminate, 9-13 cm. long, 2-3 cm. broad; apex acuminate, margin recurved, undulate; base narrowly cuneate; upper surface smooth, mat, glabrous or with vestiges of hairs and glands, midrib deeply grooved, primary veins 20-24 on each side indistinct; under surface smooth, somewhat shining but not wax-coated, pale, glabrous or with vestiges of hairs and glands, epidermis epapillate, midrib raised, primary veins slightly raised; petiole 1-1·5 cm. long, glabrescent, deeply grooved above.

INFLORESCENCE: a racemose umbel of 15 or more flowers; rhachis 3 cm. long, densely tomentose-floccose.

PEDICELS: 5 mm. long, more or less pubescent with floccose hairs.

CALYX: minute, 1·5 mm. long, floccose outside; lobes triangular, fleshy.

COROLLA: tubular-campanulate, about 3 cm. long, pink or deep red with 5 nectar pouches at base, spotted red, fleshy, glabrous outside and inside; lobes broad, emarginate, crenulate, 7 mm. long, 1·8 cm. broad.

STAMENS: 10, unequal, 1·2-2·2 cm. long; filaments glabrous.

PISTIL: 2·5 cm. long; ovary narrow, cylindric-conoid, grooved, 5 mm. long, thinly clad with strigose and floccose hairs; style glabrous.

CAPSULE: slightly curved, brown, shallowly grooved, 3 cm. long, 3 mm. broad, 5-6-chambered.

HABITAT: Bhutan. Forming thickets in mixed forests at 7000-9000 ft. altitude.

This is one of the few representatives of Irroratum in the Himalaya and it has no close link with any of the Chinese species. Its foliage is not unlike that of *R. irroratum* and of *R. araiophyllum* and tends to be narrow-lanceolate. What appears in *Bot. Mag*, t. 5129, is a broader leaved variety.

RHODODENDRON LAXIFLORUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 50.

Illustration—

Habit : a shrub of 12-20 ft. ; young branches thin, at first glandular, later glabrous, those below inflorescences about 4 mm. diameter.

Leaves : lamina leathery, oblanceolate to oblong-elliptic, 8-13·5 cm. long, 2-4 cm. broad ; apex broadly acute to obtuse ; margin roughened ; base cuneate ; upper surface bright green, mat, smooth, glabrous or with vestiges of hairs and glands, midrib grooved, primary veins about 16 on each side slightly grooved ; under surface paler, glabrous, minutely red-punctulate, midrib prominently raised, floccosely-glabrescent and punctulate, primary veins slightly raised ; petiole 1·5 cm. long, glandular, slightly grooved above.

Inflorescence : a loose racemose umbel of about 12 flowers ; rhachis 1-2 cm. long, glabrous or very sparsely glandular.

Pedicels : 2-3 cm. long, densely glandular.

Calyx : minute, 1-2 mm. long, margin undulate with broadly rounded lobes, glandular and gland-ciliate.

Corolla : openly campanulate to cup-like, 4 cm. long, pure white, sometimes suffused rose, unspotted ; lobes 5, 1·5 cm. long, 2 cm. broad, emarginate.

Stamens : 10, 1·8-2·8 cm. long ; filaments glabrous or very finely puberulous.

Pistil : 3·5 cm. long ; ovary conoid, 5 mm. long, densely glandular ; style glandular to tip and slightly expanded below the lobulate stigma.

Capsule : oblong-cylindric, blunt, 2-2·5 cm. long, 8-10 mm. broad, straight or very slightly curved, 8-10-chambered, blackish.

Habitat : Western Yunnan ; Shweli—Salween Divide. In mixed thickets at 8000 ft. altitude.

This species is akin to *R. Annae* and so not far from *R. irroratum* itself. But as in *R. Annae* the corolla is cupular. Its oblanceolate leaves and larger white flower separates it from *R. Annae*, from which it is far removed geographically.

RHODODENDRON LEPTOPEPLUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 82.

Illustration—

Habit : a shrub of 9-14 ft. ; young shoots densely glandular and thinly floccose, older branches glabrescent, shoots below inflorescences about 4 mm. diameter.

Leaves : lamina sub-leathery, oblanceolate, 7-14 cm. long, 2-3·5 cm. broad ; apex abruptly acuminate ; base tapered ; upper surface somewhat glossy, becoming lustrous when heated, glabrous at maturity or with vestiges of juvenile hairs in the grooved midrib, primary veins about 16 on each side impressed ; under surface clad with a thin loose whitish or fawn tomentum, midrib prominent and more or less floccose and glandular ; petiole 1-2 cm. long, grooved, densely glandular and floccose.

Inflorescence : a racemose umbel of about 12 flowers ; rhachis about 1 cm. long, densely pubescent and with intermixed glands.

Pedicels : about 1·5 cm. long, densely glandular with short-stalked glands.

Calyx : 4-5 mm. long, split to near base into 5 ovate or rounded subequal lobes. sparse glandular on the back and gland-fringed.

Corolla : campanulate, about 4 cm. long, creamy-white flushed rose, blotched crimson at the base and freely spotted crimson on the posterior side ; lobes 5, rounded, emarginate, about 1·5 cm. long, 2 cm. broad.

Stamens : 10, unequal, 1·5-3 cm. long ; filaments puberulous at the base.

Pistil : about 4 cm. long ; ovary conoid, about 5 mm. long, densely glandular and slightly pubescent ; style glabrous.

Capsule :

Habitat : Yunnan ; Mekong—Salween Divide. In rhododendron forests at 13,000 ft. altitude.

This, like *R. agastum*, deviates from the typical Irroratums in the thin veil of indumentum on the leaf under surface. But as regards leaf-shape, truss and flower characters, it is in accord with other members of the series. The wax-coated upper surface, which becomes highly polished by the melting of the wax when the leaf is warmed, suggests an affinity with *R. lukiangense*.

RHODODENDRON LUKIANGENSE, *Franch.* in *Journ. de Bot.*, vol. 12 (1898), 257.

Illustration—

Habit : a shrub of medium size ; shoots one year old purplish.

Leaves : lamina of parchment consistency, oblong-lanceolate or oblanceolate, narrowed to both ends ; apex acute or abruptly acuminate ; margin not asperous, eglandular ; base obtuse ; upper surface dark green, minutely rugulose, at maturity glabrous, more or less glossy, midrib grooved, primary veins 15-20 on each side impressed ; under surface pale green, at maturity glabrous, somewhat shining, obscurely punctulate, midrib prominent, primary veins distinct, not raised ; petiole slightly purplish, about 1·5 cm. long, at first somewhat floccose.

Inflorescence : a racemose umbel of about 8-12 flowers ; rhachis 1·5 cm. long, tomentose with whitish hairs.

Pedicels : rarely exceeding 1 cm. long, glabrous or sparsely pubescent.

Calyx : about 1·5 cm. long, glabrous or sparsely floccose-pubescent ; lobes 5, deltoid.

Corolla : tubular-campanulate, 4-4·5 cm. long, rose to magenta-rose with a small basal blotch and more or less spotted crimson ; lobes 5, unequal, about 1·5 cm. long, 2 cm. broad, rounded, emarginate.

Stamens : 10, unequal, 2-3 cm. long ; filaments glabrous or minutely puberulous.

Pistil : about 4 cm. long ; ovary about 7 mm. long, narrow-cylindric, slightly grooved, glabrous or most sparingly floccose-pubescent ; style glabrous.

Capsule : narrow-cylindric, 1·5-2·5 cm. long, 4-5 mm. broad, brown to blackish, distinctly ribbed, glabrous, 6-chambered.

Habitat : North-Western Yunnan, Lukiang Valley, west of Tseku, and on the Mekong—Salween Divide. In thickets and pine forests at 10,000 ft. altitude.

In the glabrous ovary (rarely puberulous in the subspecies *R. ceraceum*) and in the glabrous style the species is akin to *R. eritimum* and *R. anthosphaerum*. It differs from these in its 5-partite corolla and epapillate epidermis and also in the wax-coated leaf surfaces. Within the series this peculiar wax-coating is found only in *R. lukiangense* and the associated subspecies and in *R. leptopeplum*. Its presence is readily ascertained by heating the leaf upper surface, when the wax melts and gives a lustrous polish as if varnished.

SUBSPECIES OF RHODODENDRON LUKIANGENSE

R. admirabile, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 27.

An Eastern representative of *R. lukiangense* from the Muli Mountains in South-Western Szechuan. The leaves are lanceolate or oblanceolate, somewhat narrow for their length. Flower deep rose without or with few spots. The rhachis is longer and the truss larger than the type form.

South-Western Szechuan, Muli Mountains. In open situations at 10,000-11,000 ft. altitude.

R. adroserum, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 28.

This comes from the same area as *R. lukiangense*, from which it differs chiefly in the smaller oblanceolate to obovate leaves with less acuminate apices. The flowers, conspicuously spotted on the posterior side, are light rose at base flushed magenta-crimson towards the margins. The rhachis is less tomentose. It may be regarded as almost identical with *R. gymnanthum*.

North-Western Yunnan, Mekong—Salween Divide. Pine forests at 11,000-12,000 ft. altitude.

R. ceraceum, *Balf. f. & W. W. Sm.* in *Trans. Bot. Soc. Edin.*, 27 (1917), 187.

A distinct subspecies with broadly oblanceolate or oval-lanceolate to almost elliptic leaves with abruptly acuminate tips. The upper part of the leaf is commonly ridged longitudinally. The under side is distinctly glossy. Flowers magenta-rose with a small basal blotch and with a few deeper spots, or spots may be absent. The disc is distinctly puberulous, and at times the ovary also.

South-Eastern Tibet; north-west of Tseku, Doker-la, Mekong—Salween Divide. In thickets and pine forests at 10,000-11,000 ft. altitude.

R. gymnanthum, *Diels* in *Notes R.B.G. Edin.*, vol. 5 (1912), 211.

A form with narrow leaves and acuminate apices. Flowers rose with crimson markings.

North-Western Yunnan, Mekong—Salween Divide; north-west of Tseku. In rocky situations at 13,000 ft. altitude.

RHODODENDRON MENGTSZENSE, *Balf. f. & W. W. Sm.* in *Trans. Bot. Soc. Edin.*, vol. 27 (1917), 206.

Illustration—

Habit : a tree of about 20 ft. ; young branches setose-glandular, those below inflorescences about 4 mm. in diameter.

Leaves : lamina firm, narrowly oblanceolate, 11-16·5 cm. long, 2·5-3·5 cm. broad ; apex acute ; margin undulate and roughened ; base cuneate to obtuse ; upper surface mat, to the eye glabrous but punctulate with the bases of fallen glands and hairs, the groove of the midrib more or less clad with withered hairs and glands, primary veins about 16 on each side not prominent ; under surface paler, at maturity glabrous, minutely punctulate, midrib and primary veins raised and punctulate ; petiole 1-1·5 cm. long, clad with setose glands.

Inflorescence : a short racemose umbel of 8 flowers ; rhachis 1 cm. long, glandular.

Pedicels : about 2 cm. long, densely setose-glandular.

Calyx : about 2 mm. long, cupular, fleshy, gland-setose ; lobes deltoid.

Corolla : openly campanulate, 3·8 cm. long, purple-red blotched deep crimson in the 5 basal nectar pouches, glabrous outside ; lobes 5, 1·6 cm. long, 2 cm. broad, rounded, emarginate, subcrenulate.

Stamens : 10, unequal, 1·5-3 cm. long ; filaments puberulous at base.

Pistil : about 3·5 cm. long ; ovary about 5 mm. long, cylindric, truncate, grooved, clad with many long-stalked glands and with fewer sharp-pointed eglandular setae ; style glandular throughout, glands at the base long-stalked and mixed with sharp-pointed setae.

Capsule :

Habitat : South-Eastern Yunnan ; Mengtsz. In mountain forests at 7000 ft. altitude.

This, like *R. pogonostylum*, comes from South-Eastern Yunnan, but deviates more than that species from its ally *R. irroratum* in its very elongate oblanceolate leaves and bristly petioles.

RHODODENDRON NINGYUENENSE, *Hand.-Mazz.* in *Anz. Akad. Wiss. Wien*, vol. 57 (1920), 288.

Illustration—

Habit : a medium-sized shrub ; branches at first floccose-puberulous, later glabrescent ; shoots below inflorescences 3 mm. in diameter.

Leaves : lamina thick, leathery, oblong-lanceolate, 5-9·5 cm. long, 1·2-3 cm. broad, narrowed to both ends more abruptly at the acute apex ; base cuneate ; upper surface smooth, mat, at maturity glabrous except for vestiges of hairs and glands in the grooved midrib, primary veins 10-16 on each side slightly impressed ; under surface paler, at maturity glabrous, minutely punctulate, epidermis epapillate, midrib prominent, glabrescent, primary veins slightly raised ; petiole 8-12 mm. long, at first more or less floccose.

Inflorescence : a short racemose umbel of 3-6 flowers ; rhachis about 5 mm. long, tomentose and glandular.

Pedicels : 9-15 mm. long, reddish glandular and sparse floccose.

Calyx : minute, 1-2 mm. long, glandular.

Corolla : funnel-campanulate, about 4 cm. long, whitish-rose unspotted ; lobes 5, orbicular, undulate.

Stamens : 10, 2-2·5 cm. long ; filaments sparingly and finely puberulous over about lower third of their length.

Pistil : about 3·5 cm. long ; ovary about 5 mm. long, conoid, densely glandular with short-stalked glands and fewer fasciate hairs towards the base ; style glandular to tip and slightly thickened below the stigma.

Capsule :

Habitat : Szechuan ; Ningyuen. In mixed forests at 8,000-10,000 ft. altitude.

This is a Szechuan outlier with its nearest ally in *R. irroratum* itself. It is not in cultivation. It differs somewhat from *R. irroratum* in the almost glabrous filaments and the absence or very slight spotting of the corolla and in the sparsely tomentose as well as glandular ovary.

RHODODENDRON OMBROCHARES, *Balf. f. & Ward* in *Notes R.B.G. Edin.*, vol. 13 (1922), 280.

Illustration—

Habit : a medium-sized tree ; young shoots at first floccose, later glabrescent ; unfolding leaves more or less floccose above and below ; shoots below inflorescences about 5 mm. diameter.

Leaves : lamina oblong-lanceolate to oblanceolate, 7-16 cm. long, 2-5 cm. broad ; apex shortly acuminate ; base cuneate ; margin slightly recurved, roughened ; upper surface mat, at maturity glabrous except for vestiges of tomentum in the deeply grooved midrib, primary veins about 21 on each side deeply impressed ; under surface pale, glabrous, epapillate, the veins minutely punctulate with the bases of fallen hairs, midrib prominently raised, glabrescent with vestiges of tomentum, primary veins prominent ; petiole about 2 cm. long, deeply grooved, glabrescent with vestiges of tomentum.

Inflorescence : a racemose umbel of 6-8 flowers ; rhachis 1-2 cm. long, thinly pubescent or glabrous.

Pedicels : barely 1 cm. long, stout, sparingly floccose and glandular, or almost glabrous.

Calyx : small, 1-2 mm. long ; lobes 5, minute triangular, sparse floccose and sparingly fringed.

Corolla : tubular-campanulate, 4-5 cm. long, deep or cherry crimson marked with darker spots on the petals, fleshy, with 5 nectar pouches at the base ; lobes 5, rounded, 1·8 cm. long, 2 cm. broad.

Stamens : 10, unequal, 2·5-3·5 cm. long ; filaments puberulous.

Pistil : 4 cm. long ; ovary conoid, 7 mm. long, tomentose sometimes with a few glands also ; style glabrous.

Capsule :

Habitat : North-Eastern Upper Burma. In open places in forests at 7000-8000 ft. altitude.

This species is closely linked with *R. cerochitum* and *R. tanastylum*. They are almost identical as regards foliage. *R. ombrochares* has a hairy ovary while that of *R. tanastylum* is glabrous. Both have deep-red flowers, while *R. cerochitum* flowers are rose.

RHODODENDRON PAPILLATUM, *Balf. f. & Cooper* in *Notes R.B.G. Edin.*, vol. 13 (1922), 282.

Illustration—

Habit : a small bush ; shoots glabrescent, those below inflorescences about 5 mm. in diameter.

Leaves : lamina leathery, oblong-oval, 6-10 cm. long, 2-3 cm. broad ; apex acute ; margin undulate somewhat rough ; base obtuse, semi-rounded ; upper surface at maturity smooth, mat, glabrous, midrib deeply impressed, primary veins about 15 on each side slightly impressed ; under surface pale, papillate, clad with a very thin detersile veil-like indumentum, midrib prominent, primary veins slightly raised ; petiole about 1·5 cm. long, grooved above and glabrescent with vestiges of a juvenile indumentum.

Inflorescence : a racemose umbel of about 8 flowers ; rhachis about 2 cm. long, pubescent.

Pedicels : about 1·5 cm. long, densely glanduiar and more or less floccose with fewer branched hairs.

Calyx : small, somewhat fleshy, about 2 mm. long ; lobes 5, undulate rounded or angular, fringed with glands.

Corolla : campanulate, 3·5 cm. long, pale cream, blotched at base and spotted pink inside ; lobes 5, rounded, 1 cm. long, 1·7 cm. broad.

Stamens : 10, 2-3 cm. long ; filaments puberulous at base.

Pistil : 3·5 cm. long ; ovary conoid, truncate, 8 mm. long, densely tomentose with fasciate hairs, and more or less glandular with stalked glands ; style glabrous throughout, or with a few hairs and glands at the very base ; stigma small, lobulate.

Capsule :

Habitat : Bhutan ; Bela Djang Pass. A bush rhododendron under Abies at 10,000 ft. altitude.

This species, with its ally *R. cpapillatum*, both from Bhutan, deviate somewhat from the general run of the Yunnan Irroratums and have no near relations there. Their glandular and tomentose ovary is generally accompanied by a glabrous style -an unusual combination in the series. The oblanceolate blunt leaves of *R. cpapillatum* serve to separate it easily from *R. papillatum*.

RHODODENDRON PENNIVENIUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 55.

Illustration—

Habit : a shrub of 9-20 ft. ; young shoots clad with a thin floccose indumentum also more or less glandular.

Leaves : lamina oblong-elliptic to broadly lanceolate, 8-15 cm. long, 2·5-5 cm. broad ; apex acute or very abruptly acuminate ; base obtuse to cuneate ; upper surface smooth glabrous or with vestiges of tomentum in the grooved midrib and impressed primary veins ; under surface greyish to fawn, with a thin persistent indumentum of interlaced cobweb-like hairs, midrib prominently raised, somewhat floccose and also glandular, primary veins 18-22 on each side prominent ; petiole 1-2 cm. long, at first floccose and glandular, finally glabrescent, deeply grooved above.

Inflorescence : a racemose umbel of about 10 flowers ; rhachis 1-1·5 cm. long, somewhat pubescent and floccose.

Pedicels : about 1 cm. long, stout, clad with glands and floccose hairs.

Calyx : small, about 2 mm. long ; lobes 5, small, thick, glandular and floccose.

Corolla : tubular-campanulate, about 4 cm. long, fleshy, with 5 basal nectar pouches, deep crimson with deeper spots within ; lobes 5, emarginate, unequal, 1·5 cm. long, as much as 2·5 cm. broad.

Stamens : 10, unequal, 2·5-3·5 cm. long ; filaments glabrous or more or less puberulous.

Pistil : about 4-5 cm. long ; ovary cylindric-conoid, 7 mm. long, more or less glandular and densely tomentose ; style glabrous.

Capsule : oblong-cylindric, blunt, 2·5 cm. long, 7 mm. broad, blackish-purple, distinctly ribbed, 10-chambered.

Habitat : Yunnan ; Shweli—Salween Divide. In pine and mixed forests at 11,000 ft. altitude.

Like *R. agastum*, this suggests a link with the series Arboreum. Its foliage recalls that of *R. Delavayi* but the veil of indumentum is very thin. In leaf-shape and in its floral characters it approaches *R. ombrochares* and *R. tanastylum*.

RHODODENDRON POGONOSTYLUM, *Balf. f. & W. W. Sm.* in *Trans. Bot. Soc. Edin.*, vol. 27 (1917), 210.

(R. ADENOSTEMONUM, *Balf. f. & W. W. Sm.*)

ILLUSTRATION—

HABIT : a small tree of about 15 ft. ; branches a year old with vestiges of a thin indumentum of hairs and short-stalked glands.

LEAVES : lamina leathery, rigid, oblong-lanceolate or oblong-ovate, 7-12 cm. long, 3-4·5 cm. broad ; apex acute, margin roughened ; base obtuse or somewhat rounded ; upper surface smooth, at maturity glabrous except for gland and hair vestiges in the deeply grooved midrib, primary veins about 16 on each side grooved ; under surface pale, minutely punctulate, midrib prominently raised, primary veins elevated ; petiole 1·5-2 cm. long, grooved, glabrescent.

INFLORESCENCE : a short racemose umbel of about 8 flowers ; rhachis about 1 cm. long, rufous-floccose.

PEDICELS : stout, about 8 mm. long, clad with stalked glands and fewer floccose hairs.

CALYX : minute, 1-2 mm. long ; lobes 5, broadly ovate, glandular and floccose.

COROLLA : tubular-campanulate, about 4 cm. long, pink, inside puberulous and spotted dark red on the back, outside more or less glandular, tube 5-pouched at the base ; lobes 5, rounded, emarginate, about 1·8 cm. long, 2·5 cm. broad.

STAMENS : 10, 2-3 cm. long ; filaments densely pubescent at base.

PISTIL : about 4 cm. long ; ovary conoid, about 6 mm. long, densely tomentose with fasciate branched hairs which cover many short-stalked glands ; style clad throughout or for some distance from the base with glands and sometimes with hairs also.

CAPSULE : slightly curved, about 4 cm. long, 1 cm. broad, glabrescent and blackish, 8-chambered.

HABITAT : South-Eastern Yunnan ; Mengtsz. In forests at 7000-8500 ft. altitude.

This is known only from the original collections of Henry. In general appearance it resembles *R. irroratum*. The foliage is, however, broader, and the ovary has the character, unusual in this series, of being more tomentose than glandular. In spite of its specific name, the style at times may be without hairs, though always glandular. *R. adenostemonum* from the same area is a form of this with much less spotting on the corolla.

RHODODENDRON SHEPHERDII, *Nutt.* in *Hook. Kew Journ.*, vol. 5 (1853), 360.

Illustration—*Bot. Mag.*, vol. 85 (1859), t. 5125.

Habit : a shrub with glossy branchlets.

Leaves : lamina leathery, oblong, elliptic-oblong, 7-10 cm. long, 2·5 cm. broad ; apex acute ; base subacute ; upper surface deep green, opaque, glabrous, midrib deeply grooved ; under surface pale, midrib prominent, veins slender ; petiole short, glabrous or slightly pubescent beneath.

Inflorescence : a many-flowered umbel.

Pedicels : glabrous.

Calyx : distinctly lobed ; lobes subacute.

Corolla : tubular-campanulate, deep scarlet (according to the figure quoted above, spotted and with dark-crimson gibbous pouches at base) ; lobes 5, emarginate.

Stamens : 10, clustered around style ; filaments glabrous.

Pistil : shorter than corolla ; ovary glabrous, 7-chambered ; style glabrous, slightly exceeding the stamens.

Capsule :

Habitat : Bhutan, Oola Mountains.

Knowledge of this species is confined to what appears in the *Botanical Magazine*, tab. 5125, and the above description is based on what is said and figured there. No dried specimens of the plant figured are available, and it is doubtful whether the true plant is now in cultivation.

RHODODENDRON SPANOTRICHUM, *Balf. f. & W. W. Sm.* in *Trans. Bot. Soc. Edin.*, vol. 27 (1917), 214.

Illustration—

Habit : a small tree of about 20 ft. ; branches glabrous, minutely punctulate with bases of fallen glands, those below inflorescences about 3 mm. diameter.

Leaves : lamina leathery, oblanceolate, 7-12 cm. long, 2-4 cm. broad ; apex beaked, shortly acuminate ; margin rough, undulate ; base obtuse or cuneate ; upper surface mat, smooth, at maturity glabrous, midrib grooved, primary veins about 18 on each side, slightly grooved ; under surface glabrous but punctulate with the bases of fallen glands or hairs, midrib prominent, primary veins conspicuous ; petiole 1·5 cm. long, glabrescent, punctulate like lamina.

Inflorescence : a racemose umbel of about 10 flowers ; rhachis 1·8 cm. long, glabrous.

Pedicels : about 7 mm. long, clad with rufous floccose hairs.

Calyx : minute, about 1·5 mm. long, cupular, glabrous, or with a few rufous floccose hairs ; lobes deltoid or ovate.

Corolla : campanulate, 4-4·5 cm. long, crimson with a darker blotch at base, glabrous outside and inside ; lobes 5, unequal, 2-2·5 cm. long, 2-2·5 cm. broad, elliptic to rounded, emarginate, crenulate.

Stamens : 10, unequal, 1·6-3·6 cm. long ; filaments glabrous.

Pistil : about 3·5 cm. long ; ovary conoid, slightly grooved, about 5 mm. long, sprinkled with floccose hairs ; style glabrous.

Capsule :

Habitat : South-Eastern Yunnan ; Feng Chen Lin Mountains. In forests at 7500 ft. altitude.

Of this species little is known beyond Henry's first collection of it. Its nearest ally would appear to be *R. ombrochares*, from which it is, however, widely separated geographically.

RHODODENDRON TANASTYLUM, *Balf. f. & Ward* in *Trans. Bot. Soc. Edin.*, vol. 27 (1917), 217.

Illustration—

Habit : a medium-sized bush or tree of straggling habit of 8-20 ft. ; young branches slender, at first thinly white-floccose, later glabrescent.

Leaves : lamina broadly lanceolate or oblanceolate, narrowed to both ends from near the middle, 7·5-12 cm. long, 2·5-4·3 cm. broad ; apex shortly acuminate or obtuse, margin undulate, somewhat roughened ; base obtuse or subcuneate ; upper surface at maturity mat, glabrous except for the grooved midrib which is more or less lined by vestiges of hairs, primary veins 16 on each side ; under surface paler, somewhat glossy, at maturity glabrous, minutely punctulate, midrib and primary veins raised ; petiole about 1·5 cm. long, thick, grooved, more or less floccose, finally glabrescent.

Inflorescence : a racemose umbel of about 8 flowers ; rhachis 1-2 cm. long, slender, thinly pubescent.

Pedicels : about 1 cm. long, stoutish, sparingly sprinkled with short floccose hairs or almost glabrous.

Calyx : minute, cupular, fleshy, about 2 mm. long ; lobes 5, broadly ovate or angular, glabrous or sparsely floccose.

Corolla : tubular-campanulate, 4-5 cm. long, fleshy with 5 nectar pouches at the base, deep crimson with few or many deeper tinted spots ; lobes 5, rounded, emarginate, 1·7 cm. long, 2-2·5 cm. broad.

Stamens : 10, unequal, 2-3·5 cm. long ; filaments glabrous or finely puberulous at the base.

Pistil : about 4·5 cm. long ; ovary cylindric, 7 mm. long, glabrous ; style glabrous, hardly widened below the small stigma.

Capsule : oblong, blunt, 1·5 cm. long, 5 mm. broad, blackish, glabrous, 8-chambered.

Habitat : Eastern Upper Burma and adjoining parts of Western Yunnan. In open thickets and forests at 9000-11,000 ft. altitude.

This is a close ally of *R. ombrochares*, which, however, has normally a hairy ovary. The two are much alike in foliage and in flower colour. *R. cerochitum*, another close ally, differs in the rose-coloured flowers and in the grey-glaucous leaf surface.

IRRORATUM SERIES

SUBSERIES PARISHII

The characters of the subseries are discussed in the introduction to the series.

KEY TO THE SPECIES

A. Leaf more or less oblong-oval to oblong-lanceolate, 2-4 times as long as broad :
  B. Petiole and leaf under surface setose-glandular.
    Pedicels setose-glandular :
      C. Style glandular to tip.
        Pedicel 3 cm. long . . . . . **Kyawi.**
      CC. Style glandular at base only.
        Pedicel 1-1·5 cm. long . . . . **agapetum.**
  BB. Petiole and leaf under surface not setose-glandular.
    Pedicels floccose or floccose and glandular :
      C. Leaves large, 10-20 cm. long :
        D. Calyx large, 1·5-2 cm. long.
          Style eglandular . . . . **schistocalyx.**
        DD. Calyx small, 4-5 mm. long.
          Style more or less glandular :
            E. Leaves coriaceous with stout petioles.
              Pedicels eglandular . . . . **eriogynum.**
            EE. Leaves of thinner texture with slender petioles.
              Pedicels more or less glandular . . **facetum.**
      CC. Leaves small, 5-10 cm. long . . . **Elliottii.**
AA. Leaf more or less obovate, hardly twice as long as broad **Parishii.**

RHODODENDRON AGAPETUM, *Balf. f. & Ward* in *Notes R.B.G. Edin.*, vol. 9 (1916), 212.

Illustration—

Habit: a small scraggy tree of 15-20 ft.; young shoots setose-glandular and somewhat floccose with branched stellate hairs, older shoots glabrescent; branches below inflorescences about 6 mm. diameter.

Leaves: lamina oblong to oblong-elliptic, 10-15 cm. long, 3·5-5·5 cm. broad; apex obtuse to rounded; base obtuse to semi-rounded; upper surface at maturity smooth, somewhat glossy, glabrous except for vestiges of hairs in the grooved midrib, primary veins about 18 on each side very slightly impressed; under surface paler, at first clad with a dense whitish indumentum of detersile stellate hairs and setiform glands, the former easily rubbed off and ultimately falling away leaving the leaf under surface almost glabrous, midrib prominent, at first floccose and glandular, primary veins elevated; petiole about 3 cm. long, at first setulose-glandular and floccose, finally glabrescent.

Inflorescence: a racemose umbel of about 10 flowers; rhachis about 2·5 cm. long, pubescent and glandular.

Pedicels: about 1·3 cm. long, pubescent, densely setulose-glandular.

Calyx: small, about 2 mm. long, cupular, setulose-glandular, margin undulate, gland-ciliate.

Corolla: campanulate, about 4·5 cm. long, crimson-scarlet, fleshy with 5 basal nectar pouches, outside towards base glandular, lobes 5, rounded, about 1·5 cm. long, 2 cm. broad, emarginate.

Stamens: 10, unequal, 2·5-3·5 cm. long; filaments puberulous for about half their length.

Pistil: about 4·5 cm. long; ovary conoid, about 7 mm. long, densely tomentose with fasciate stellate hairs and setulose-glandular with stalked glands; style sparsely clad with setulose glands and branched hairs over about 1 cm. at the base, glabrous above and expanding into a lobulate stigma.

Capsule: oblong-cylindric, slightly curved, brownish tomentose, 3 cm. long, 6 mm. broad, 6-chambered.

Habitat: Eastern Upper Burma; Hpimaw. On limestone cliffs in half shade at 6000-7000 ft. altitude.

This has been collected only once and the material is scanty. It is not identical with *R. Kyawi*, but is certainly closely akin.

RHODODENDRON ELLIOTTII, *Watt MS.* ex *Brandis Ind. Trees*, p. 410 (descript. *W. W. Sm.*), in *Notes R.B.G. Edin.*, vol. 8 (1914), 214.

Illustration—*Notes R.B.G. Edin.*, vol. 8 (1914), plate cxl.

Habit : a small straggling tree ; young branches stellately tomentose and setose-glandular.

Leaves : lamina elliptic-oblong, 5-12 cm. long, 2·5-5·5 cm. broad ; apex obtuse ; base broadly cuneate or rounded ; upper surface glossy green, at maturity glabrous, midrib grooved, primary veins about 12-14 on each side slightly raised ; under surface paler, at maturity glabrous or with vestiges of a stellate tomentum, midrib raised, primary veins indistinct ; petiole 2·5 cm. long, grooved above, thinly floccose and setose-glandular, finally more or less glabrescent.

Inflorescence : a racemose umbel of 15 flowers ; rhachis about 1 cm. long, slightly elongated.

Pedicels : 1 cm. long, minutely glandular.

Calyx : cupular, 3-4 mm. long, puberulous, glandular.

Corolla : funnel-campanulate, 4·5 cm. long, fleshy, deep rose-purple with darker spots, glabrous outside and in ; lobes 5, 1·5 cm. long and broad, emarginate.

Stamens : 10, 2-4 cm. long ; filaments glabrous.

Pistil : 4·5 cm. long ; ovary 7 mm. long, oblong, densely rufously stellate-tomentose ; style stellately hairy and glandular with stalked glands, the hairs more numerous towards the base, the glands dominating towards the apex and extending to the tip.

Capsule : oblong blunt, 1·5 cm. long, 5-6 cm. broad, grooved, rufous-tomentose, 6-chambered.

Habitat : Manipur, Japvo, Naga Hills. At 9000 ft. altitude.

This little known species is from Manipur. Its place is undoubtedly with the Burmese species centring round *R. Kyawi*. It has much smaller leaves than its allies, but in flower truss, corolla, ovary, style and fruit it closely resembles *R. facetum*.

RHODODENDRON ERIOGYNUM, *Balf. f. & W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 10 (1917), 101.

Illustration—

Habit : a shrub or small tree 10 ft. high, vegetative shoots stout, at first clad with a whitish stellate-floccose indumentum with a few glands intermixed, quickly falling away.

Leaves : lamina leathery, oblong-elliptic, oblong-lanceolate, 12-20 cm. long, 5-7·5 cm. broad ; apex obtuse ; base cuneate to rounded or truncate ; upper surface at first covered with a thin whitish mealy tomentum of stellate hairs changing in colour to a light brown quickly falling away, leaving a smooth mat, glabrous surface, midrib grooved, primary veins about 16 on each side slightly impressed ; under surface at first clad with a thin white flaking stellate indumentum easily rubbed off and quickly falling away, leaving a glabrous shiny surface, midrib prominent, glabrescent, eglandular, primary veins raised ; petiole stout, about 2·5-3 cm. long, very slightly grooved, at first clad like stem, finally glabrous.

Inflorescence : a racemose umbel of 12-16 flowers ; rhachis 1-1·5 cm. long, floccose, eglandular.

Pedicels : 1·5 cm. long, stellate-floccose, eglandular.

Calyx : 4-5 mm. long, cup fleshy, reddish ; lobes undulate or rounded, stellate-floccose on the back, eglandular.

Corolla : broadly tubular-campanulate, 4·5 cm. long, fleshy, bright red marked within on the lobes with darker tinted areas, nectar pouches at the base deep purple within ; lobes 5, 1·5 cm. long, 2 cm. broad, emarginate.

Stamens : 10, 2·5-3·5 cm. long ; filaments puberulous over about half their length.

Pistil : 3·5-4·5 cm. long ; ovary 8 mm. long, conoid, densely floccose with stellate hairs ; style densely clad at the base with stellate hairs, higher up glands appear mixed with the hairs and below the stigma glands only are found.

Capsule : oblong-ovoid, blunt, about 2 cm. long, 8 mm. broad, slightly curved, blackish beneath a detersile brown tomentum, 6-chambered.

Habitat : Yunnan ; east of the Tali Lake. Open thickets at 9000 ft. altitude.

It is doubtful whether this is really separable from *R. facetum*, but further observations in cultivation are necessary for a decision.

RHODODENDRON FACETUM, *Balf. f. & Ward* in *Notes R.B.G. Edin.*, vol. 10 (1917), 104.

Illustration—

Habit : a tree of 15-20 ft. ; young vegetative shoots at first clad with a fine white to tawny meal which is readily rubbed off and ultimately falls away.

Leaves : lamina oblong-elliptic to oblong-oblanceolate or oblong-lanceolate, 12-20 cm. long, 4-7 cm. broad ; apex obtuse, apiculate ; base cuneate to semi-rounded ; upper surface smooth, dull mat green, at first clad with a thin layer of white to tawny meal which quickly falls away, midrib slightly grooved, pale green, primary veins 15-17 on each side slightly impressed ; under surface a light green, somewhat shiny, at first clad with a thin white flaky meal easily rubbed off and in time falling away, midrib very prominent, primary veins raised ; petiole 2-3 cm. long, grooved above, at first coarsely mealy with stellate hairs, finally glabrous.

Inflorescence : a racemose umbel of 8-10 flowers ; rhachis 1·5 cm. long, floccose and glandular.

Pedicels : 1-1·5 cm. long, floccose and sparsely glandular.

Calyx : about 5 mm. long, fleshy, floccose and glandular, with 5 unequal broadly rounded or broadly triangular lobes.

Corolla : tubular-campanulate, 4·5 cm. long, fleshy, scarlet with deeper coloured spots, gibbous at the base with 5 nectar pouches, sparingly floccose outside ; lobes 5, 1·5 cm. long, 2 cm. broad, emarginate.

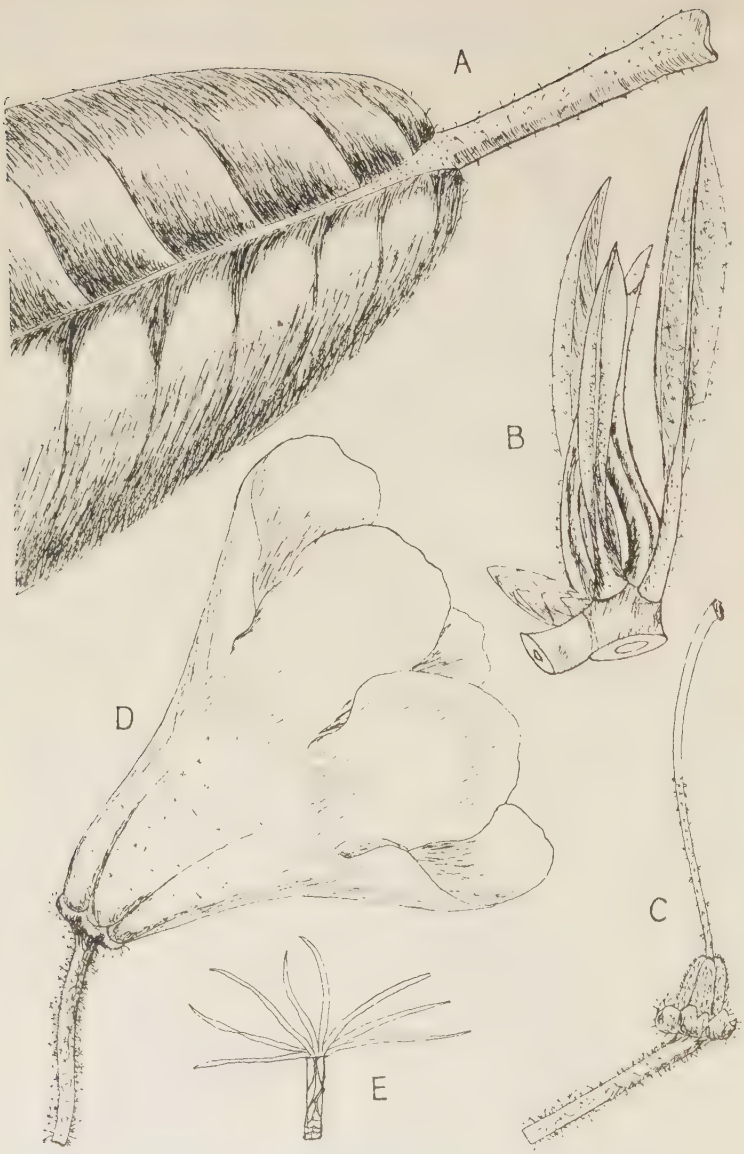
Stamens : 10, unequal, 2·7-3·7 cm. long ; filaments puberulous over the lower half.

Pistil : 4·5 cm. long ; ovary ovoid-conoid, about 9 mm. long, densely stellate-floccose ; style densely clad throughout with floccose hairs and glands, the glands few or absent towards the base but dominant towards the apex.

Capsule : shortly oblong, blunt, about 1·5 cm. long, 7 mm. broad, more or less floccose, 6-7-chambered.

Habitat : North-Eastern Burma and Western Yunnan. Rain forests at 9000 ft. altitude.

R. facetum is very near to *R. eriogynum* and the two may not be specifically distinct. The first comes from a moist area in Burma and the leaves are of thin texture, while *R. eriogynum* is a Tali plant with much more leathery foliage. Contrasted with *R. Kyawi*, *R. facetum* is much less glandular while the foliage bud (1-1·5 cm. long) is very much shorter.



Rhododendron Kvawi, *Lace & W. W. Sm.* (Original drawing.)

A. Base of leaf (upper surface) and petiole. B. Terminal foliage-bud showing spiral twist of outer bud-scales. C. Pistil. D. Corolla and pedicel. E. Indumentum hair of leaf under surface.

All very slightly reduced except E, which is enlarged.

RHODODENDRON KYAWI, *Lace & W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 8 (1914), 216. .

(R. PROPHANTUM, *Balf. f. & Forrest.*)

ILLUSTRATION—*Notes R.B.G. Edin.*, vol. 8 (1914), pl. cxli.

HABIT : a shrub of 15-20 ft. ; young shoots stout, at first sprinkled with stellate tomentum and stalked glands, finally glabrous.

LEAVES : lamina oblong, oblong-oval, 15-30 cm. long, 5·5-10 cm. broad ; apex rounded to obtuse ; base cuneate to rounded ; upper surface bright green at first thinly dusted with whitish hairs and brownish stalked glands, finally glabrous, midrib deeply grooved, primary veins 15-20 on each side deeply impressed giving a somewhat bullate surface ; under surface pale green at first densely sprinkled with stellate hairs mixed with fewer setose glands, the hairs ultimately falling away, midrib and primary veins prominent ; petiole 3-6 cm. long, rounded, slightly grooved, at first clad with stellate hairs and setose glands, later glabrescent.

INFLORESCENCE : a racemose corymb of 12-16 flowers ; rhachis about 4 cm. long, floccose and glandular.

PEDICELS : about 3 cm. long, densely setulose-glandular and sparingly floccose and pubescent.

CALYX : cupular, about 5 mm. long, split into 5 irregular broad lobes, glandular and floccose.

COROLLA : tubular-campanulate, 4·5-6 cm. long, fleshy, deep crimson with 5 basal nectar pouches of deeper colour, outside floccose and setose-glandular ; lobes 5, rounded, 1·5-2 cm. long, 2-3 cm. broad, emarginate.

STAMENS : 10, unequal, 3-4 cm. long ; filaments crimson, puberulous at base.

PISTIL : about 4·5-5·5 cm. long ; ovary conoid, 7 mm. long, densely floccose and more or less setose-glandular ; style crimson, stellately floccose and more or less setose-glandular throughout or for some distance from the base.

CAPSULE : oblong, slightly curved, 3 cm. long, 7 mm. broad, more or less brownish-tomentose, 5-6-chambered.

HABITAT : North-Eastern Upper Burma ; N'Maikha—Salween Divide. In mixed forests in enclosed ravines, at 6000-9000 ft. altitude.

This is a much more glandular plant than *R. facetum*, from which it differs also in the longer foliage-bud ; the larger leaf with more rounded apex ; the longer rhachis and pedicels ; the glandular corolla and longer fruit. *R. prophantum* presents no marked features of difference from *R. Kyawi*, and is therefore included within it.

RHODODENDRON PARISHII, *C. B. Clarke* in *Hook. Fl. Brit. Ind.*, vol. 3 (1882), 475 (descript. *Ampl. Lace*), in *Notes R.B.G. Edin.*, vol. 8 (1914), 214.

Illustration—*Notes R.B.G. Edin.*, vol. 8 (1914), pl. cxxxix.

Habit: a small tree 18-25 ft. high; young shoots at first tawny or rusty-tomentose, later glabrous, eglandular.

Leaves: lamina broadly elliptic to obovate, 6-12 cm. long, 4-7 cm. broad; apex rounded or broadly obtuse; base broadly cuneate; upper surface dark green, mat, somewhat convex, at maturity glabrous, midrib deeply grooved, primary veins 12-14 on each side very slightly impressed; under surface paler, at first clad with a loose tawny indumentum which quickly falls away giving finally a smooth eglandular surface, midrib prominent, primary veins conspicuous; petiole 2-2·5 cm. long, grooved above, at first tawny-tomentose, finally glabrescent.

Inflorescence: a corymb of 6-12 flowers; rhachis 1·5-2 cm. long, pubescent and glandular.

Pedicels: about 1·5-2 cm. long, densely glandular with short stalked glands and sparsely tomentose.

Calyx: small, about 2 mm. long; lobes 5, undulate, broadly ovate, glandular and more or less gland-ciliate.

Corolla: tubular-campanulate, 3·5 cm. long, red lined deeper along petals, fleshy, with 5 basal nectar pouches; lobes 5, rounded, 1·3 cm. long, 1·5 cm. broad, slightly emarginate.

Stamens: 10, unequal, 2-2·5 cm. long; filaments glabrous.

Pistil: about 3·5 cm. long; ovary ovoid, about 5 mm. long, densely tomentose with fasciate hairs and glandular with short clavate glands; style clad throughout with stalked glands and fewer floccose hairs.

Capsule: cylindric oblong, 2·5 cm. long, 8 mm. broad, distinctly grooved, more or less clad with a loose detersile woolly tomentum supported at the base by the hardened disk-like calyx cup, 6-chambered.

Habitat: Burma; Muleyit Peak in the Dawna Range, at 6200 ft. altitude.

The affinity of this species from the Amherst district of Lower Burma has long been in doubt, but in the character of its indumentum and in its flower structure it is clearly akin to *R. Kyawi* and its allies. Its leaf-shape marks it out easily from its associates.

RHODODENDRON VENATOR, *Tagg* in *Notes R.B.G. Edin.*, vol. 18 (1934), 219.

Illustration—

Habit : a shrub of 8-10 ft. ; young shoots clad with long-stalked, gland-tipped setae and white floccose hairs ; shoots below inflorescence about 5 mm. in diameter.

Leaves : leathery, lamina, 6-14 cm. long, 2·4 cm. broad, oblong-lanceolate to oblong-oblanceolate ; apex obtuse or acute, with a sharp recurved mucronate tip ; base obtuse to semi-cordate ; upper surface bright green, rugulose, minutely speckled with vestiges of hairs, midrib deeply grooved, primary veins 12-18 on each side ; under surface pale glaucous green, to the eye almost glabrous but under magnification sprinkled with whitish stellate hairs on the midrib and veins ; midrib prominent ; petiole stout 1·5 cm. long, clad with short stellate hairs and a few long setulose glands.

Inflorescence : a compact umbel of 10 flowers ; rhachis 6-10 mm. long, densely clad with a fawn to rusty tomentum.

Pedicels : stout, 1-1·5 cm. long, clad with a loose scurfy tomentum and a few setose glands.

Calyx : small, 1-2 mm. long ; lobes 5 broadly rounded, densely tomentose and fringed with setose glands.

Corolla : tubular campanulate, 3·5 cm. long, fleshy, deep crimson, with 5 black-crimson nectar pouches at base.

Stamens : 10, 2·5-3·5 cm. long ; filaments glabrous.

Pistil : 3·5 cm. long ; ovary conoid, densely tomentose with long branched hairs mixed with a few setose glands ; style at base stellately tomentose.

Capsule : about 1·5 cm. long, slightly curved, 5-chambered.

Habitat : South-Eastern Tibet, Tsangpo Gorge near Pemako-chung at 8,000 ft.

A species placed tentatively in the Parishii subseries on account of the stellate indumentum, but in size and shape of foliage distinct from other members of the series.

RHODODENDRON SCHISTOCALYX, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 58.

Illustration—

Habit : a shrub of 12-15 ft. ; young shoots at first thinly white floccose, eglandular, older shoots glabrescent.

Leaves : lamina thinly leathery, oblong-oblanceolate to oblong-lanceolate, 10-20 cm. long, 2-7 cm. broad ; apex obtuse or semi-rounded, shortly mucronulate ; base cuneate to obtuse or rounded ; upper surface smooth, mat, at maturity glabrous, midrib grooved, primary veins 12-14 on each side slightly impressed ; under surface pale green, at maturity glabrous or with vestiges of a juvenile tomentum of stellate hairs persisting towards the base and near the prominently raised eglandular midrib, primary veins raised ; petiole 1-2 cm. long, at first floccose like the stem, becoming glabrescent.

Inflorescence : a racemose umbel of about 10 flowers ; rhachis about 1 cm. long, floccose.

Pedicels : about 1·5 cm. long, densely floccose, eglandular.

Calyx : large, as much as 2 cm. long, split on one side almost to the base, elsewhere less deeply cut into 5 unequal reddish lobes of irregular shape often with ragged or fimbriate margin, floccose towards the base, elsewhere glabrous.

Corolla : tubular campanulate, 4-5 cm. long, bright rose to crimson, outside glabrous, ridged at the base with 5 nectar pouches which are dark crimson within ; lobes 5, broadly rounded, about 1 cm. long, 2 cm. broad, crenulate, more or less emarginate.

Stamens : 10, unequal, 2·5-3·5 cm. long ; filaments puberulous at base.

Pistil : about 4 cm. long ; ovary about 7 mm. long, conoid, densely stellate-floccose ; style densely floccose over the lower half, upper half glabrous, eglandular.

Capsule : shortly curved, about 1·5 cm. long, 8 mm. broad, brownish-floccose.

Habitat : Western Yunnan, Shweli—Salween Divide. In rhododendron thickets at 10,000-11,000 ft. altitude.

This is a near relative of *R. facetum* but differs in the large calyx which is very irregular in shape and is coloured. The calyx recalls that of *R. diphrocalyx* and of *R. neriiflorum*. It is an eglandular member of the Parishii subseries.

LACTEUM SERIES

The Lacteum series, except for *R. Wightii*, is confined to Mid and North-Western Yunnan and the areas of Tibet and Burma immediately adjoining. It shows relationship with the Taliense and Campanulatum series and with the plants of the Chrysanthum-Metternichii group. Its chief characteristics are :—Shrubs of 6-20 ft., except the dwarf *R. dumosulum* ; an indumentum which is always thin but always present and is of a distinctly diffusible type (*i.e.* fragments put in spirit under the microscope readily break up into separate rosette hairs or particles) ; this feature is particularly noticeable in *R. lacteum* and its immediate allies, but less distinct in *R. dryophyllum* and its associates ; a constant feature is the absence of glands on leaf and on flower except in the ovary of one species *R. aberrans* ; the truss is umbellate with a very short rhachis ; the corolla is white or rose except in *R. lacteum* and *R. Wightii*, where it is yellow ; the filaments are always more or less pubescent at base ; the ovary is densely tomentose in one set, glabrous or floccose in the other set, and more or less glandular in the one species referred to above.

From the allied series Taliense, the Lacteum series is best distinguished by the characteristic indumentum, which is in marked contrast to the thick felt of the majority of the Taliense series and is always free from glands. The northern Chrysanthum-Metternichii group, with more coriaceous leaves, is closely akin and shows in certain of its members an almost similar indumentum, e.g. *R. brachycarpum*, but the northern series has a more elongated candelabroid inflorescence with longer rhachis. *R. campanulatum* and its allies are distinguished from the typical members of the Lacteum series by the glabrous ovary and from *R. dryophyllum* and its associated species by a different indumentum.

These allied series are geographical expressions of the same general development and present many points in common. Apart from the characters quoted above, the northern and the Himalayan series do not afford clear lines of distinction from the Chinese species, but the individual members of the Chrysanthum-Metternichii group and those of the Campanulatum series are mostly in cultivation, and on the whole present little difficulty as regards their differentiation from any of the species of the Taliense or Lacteum series.

R. lacteum and *R. Wightii*, two yellow-flowered species with a rounded base to the corolla-tube, are very different from the general members of the series. *R. Wightii*—the only entrant from outside the area of dominant distribution—is very close to *R. lacteum*, the indumentum, however, favouring somewhat *R. campanulatum*.

The species in this series, with densely tomentose ovaries and diffusible indumentum, have 8-11 divisions in the ovary ; the

species, with more or less glabrous ovaries and less diffusible indumentum, have 5-6 divisions. *R. Traillianum,* with 8-9 cells, has a sparingly floccose ovary.

H. F. T.

KEY TO THE SPECIES

A. Flowers yellow ; corolla base rounded ; ovary 8-11-celled :
  B. Leaves broadly elliptic, flowers unspotted ; Chinese **lacteum.**
  BB. Leaves elongate-elliptic, flowers freely spotted ; Himalayan . . . . . **Wightii.**
AA. Flowers white to rose ; corolla funnel-shaped ; ovary 5-11-celled :
  B. Ovary densely floccose-tomentose ; leaf indumentum hairs diffusible ; ovary 8-11-celled (except *R. dictyotum*) :
    C. Flowers with few or no spots ; leaf indumentum thin, ovary eglandular . . { **Beesianum.** **colletum.** **emaculatum.**
    CC. Flowers much spotted ; leaf indumentum dense ; ovary floccose and glandular . . . . **aberrans.**
    CCC. Flowers much spotted ; leaf indumentum more or less dense ; ovary eglandular :
      D. Indumentum grey . . . . **nakotiltum.**
      DD. Indumentum tawny . . . . **dictyotum.**
  BB. Ovary glabrous or sparingly floccose ; leaf indumentum hairs more or less interlocking, scarcely diffusible (except *R. Traillianum*) ; ovary 5-6-celled (except *R. Traillianum*) :
    C. Ovary quite glabrous or very slightly puberulous :
      D. Leaves more or less pointed at both ends :
        E. Flowers spotted . . . . **dryophyllum.**
        EE. Flowers unspotted . . . . **aiolopeplum.**
      DD. Leaves more or less rounded at both ends :
        E. Leaves broad (4 cm.), flat, flowers 3-4 cm. long **sigillatum.**
        EE. Leaves narrow (2 cm.), revolute, flowers 2 cm. long **dumosulum.**
    CC. Ovary more or less floccose :
      D. Leaves pointed at both ends :
        E. Flowers spotted . . . . **levistratum.**
        EE. Flowers unspotted . . . . **aiolopeplum.**
      DD. Leaves blunt at both ends :
        E. Leaves broad (4 cm.), indumentum diffusible, ovary 8-9-celled . . . . . **Traillianum.**
        EE. Leaves narrow (2 cm.), indumentum interlocking, ovary 5-6-celled . . . . . **dumosulum.**

RHODODENDRON ABERRANS, *Tagg & Forrest* in *Notes R.B.G. Edin.*, vol. 15 (1927), 305.

Illustration—

Habit : a shrub of 6-15 ft. ; shoots below flower trusses about 5 mm. in diameter, rusty tomentose, older wood glabrous.

Leaves : lamina oblong-elliptic or lanceolate or oblanceolate, 5-10 cm. long, 2-3 cm. broad ; apex blunt or very shortly acuminate ; base obtuse or rounded ; upper surface minutely rugulose, glabrescent, midrib grooved, primary veins about 15 on each side slightly impressed ; under surface light or dark cinnamon, clad all over with a suède-like unistrate indumentum of small non-agglutinate rosette hairs, midrib raised, rest of venation obscured ; petiole 1·5 cm. long, grooved above, clad with a cinnamon indumentum.

Inflorescence : a racemose umbel of about 10 flowers ; rhachis about 1 cm. long, rusty tomentose and pubescent.

Pedicels : about 2 cm. long, cinnamon-tomentose, sometimes with glands also present.

Calyx : about 2 mm. long ; lobes 5, very small, fleshy, rounded or broadly triangular, pubescent and sparsely floccose.

Corolla : funnel-campanulate, about 3 cm. long, white more or less flushed rose with copious crimson markings ; lobes 5, about 1 cm. long, 1·5 cm. broad, crenulate, emarginate.

Stamens : 10, unequal, 1-2 cm. long ; filaments hairy at base.

Pistil : 2·7 cm. long ; ovary 6 mm. long, conoid, floccose and glandular, 8-celled ; style glabrous.

Capsule :

Habitat : Mid-Western Yunnan ; Chienchuan — Mekong Divide. Open conifer and rhododendron forests at 11,000-12,000 ft. altitude.

R. aberrans in general characters resembles *R. Traillianum* but it has smaller leaves and flowers. The ovary is floccose with a few intermixed glands, or is more glandular than floccose. This character and the much smaller foliage separates it from *R. Traillianum*. The Lacteum series is essentially an eglandular one, and *R. aberrans* with glands (few or many) on the ovary make it, as the name suggests, a break-away from other members of the series.

RHODODENDRON AIOLOPEPLUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1922), 226.

Illustration—

Habit : a shrub of 6-8 ft. ; young branchlets clad with a thin grey to fulvous tomentum.

Leaves : lamina lanceolate or oblanceolate, 5-10 cm. long, 1·5-2·5 cm. broad ; apex pointed ; base obtuse or tapered ; upper surface minutely rugulose, glabrescent at maturity, midrib grooved, primary veins about 12 on each side slightly impressed ; under surface buff to cinnamon, clad with a thin suède-like indumentum, midrib raised, rest of venation concealed ; petiole about 1 cm. long, clothed with an indumentum like the young shoots.

Inflorescence : a short racemose umbel of about 8-10 flowers ; rhachis about 8 mm. long, puberulous.

Pedicels : about 1·5 cm. long, floccose.

Calyx : very small, about 1 mm. long, with 5 small rounded lobes.

Corolla : campanulate, about 2·5 cm. long, white faintly flushed rose, without spots or blotch ; lobes 5, about 8 mm. long, 1·5 cm. broad, rounded, emarginate.

Stamens : 10, unequal, 1-2 cm. long, all shorter than corolla ; filaments puberulous at the base.

Pistil : about 2·5 cm. long ; ovary conoid, about 3·5 mm. long, 6-chambered, glabrous or sparsely puberulous ; style glabrous.

Capsule :

Habitat : North-Western Yunnan ; mountains east of Chungtien. In rhododendron thickets at 12,000 ft. altitude.

R. aiolopeplum resembles closely *R. levistratum* in its foliage, but the leaves are narrower for their length and the corolla is unspotted.

RHODODENDRON BEESIANUM, *Diels* in *Notes R.B.G. Edin.*, vol. 5 (1912), 214.

Illustration—

Habit : a shrub or small tree of 10-20 ft. ; branches stout with conspicuous leaf-scars ; those below inflorescences as much as 1 cm. in diameter, at first clad with a thin white indumentum, later glabrous.

Leaves : lamina oblong-lanceolate or narrowly oblanceolate, 15-30 cm. long, 4-7 cm. broad ; apex acuminate ; gradually tapered to an obtuse or rounded base ; upper surface smooth, glabrous at maturity, midrib grooved, primary veins about 20 on each side slightly impressed ; under surface clad with a thin smooth non-agglutinate pale cinnamon indumentum, midrib prominent, primary veins not concealed by the indumentum ; petiole broad at base, winged or ridged on each side, deeply grooved above, 2-3 cm. long.

Inflorescence : a large racemose umbel of 15-25 flowers surrounded by the somewhat persistent bud-scales and bracts, the former very sticky ; rhachis stout, 2·5 cm. long, densely puberulous.

Pedicels : 2-2·5 cm. long, thinly floccose.

Calyx : 2 mm. long ; lobes 5, broadly triangular.

Corolla : broadly campanulate, 5 cm. long, white to rose with few crimson markings ; lobes 5, rounded, crenulate, emarginate, 1·5 cm. long, 2·5 cm. broad.

Stamens : 10, unequal, 2-3 cm. long ; filaments puberulous at the base.

Pistil : 3·5 cm. long ; ovary 7 mm. long, cylindric, conoid, tawny floccose, 11-chambered ; style glabrous, slightly curved at apex and there expanded below the lobulate stigma.

Capsule :

Habitat : Central Yunnan ; eastern flank of the Lichiang Range. Open Abies forests at 11,000-14,000 ft. altitude. This is the locality of the type gatherings. Other gatherings by Mr. Forrest extend the distribution northward to Yungning and Muli. In North-Western Yunnan, in the neighbourhood of Atuntzu, Mr. Forrest has collected a form with leaves narrow for their length. These have smaller flowers than the type and may prove in cultivation a distinct geographical form.

R. Beesianum is the centre of a small group of plants which includes *R. colletum* and *R. emaculatum*. They agree in their rose-coloured flowers with few or no markings. They have the typical indumentum of *R. lacteum*.

RHODODENDRON COLLETUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 39.

(R. MICROTERUM, *Balf. f.* in MS.)

ILLUSTRATION—

HABIT : a shrub of 6-15 ft. ; branches stout, those below inflorescences as much as 1 cm. in diameter, at first thinly floccose.

LEAVES : lamina narrowly oblanceolate, 9-14 cm. long, 3-4·5 cm. broad ; apex shortly acuminate ; narrowed from the broadest part to a cuneate base ; upper surface glabrous or showing traces of juvenile hairs, midrib grooved, primary veins 16-20 on each side impressed ; under surface pale grey-green or pale cinnamon, clad with a thin non-agglutinate indumentum, midrib raised, straw-coloured, primary veins showing beneath the indumentum ; petiole about 2 cm. long, with narrow wings on each side, glabrous or with vestiges of hairs.

INFLORESCENCE : a compact terminal umbel of 15-20 flowers ; rhachis about 1 cm. long, puberulous.

PEDICELS : about 2 cm. long, puberulous with a few floccose hairs.

CALYX : small ; lobes 5, small rounded or pointed with a few marginal hairs.

COROLLA : openly campanulate, whitish flushed rose or pale rose with faint crimson markings ; lobes 5, 1·5 cm. long, 2·2 cm. broad, emarginate, somewhat undulate.

STAMENS : 10, unequal, 1·5-3 cm. long ; filaments puberulous at base.

PISTIL : about 3 cm. long ; ovary about 5 mm. long, conoid, cylindric, grooved, 11-chambered, densely floccose ; style glabrous.

CAPSULE : oblique to pedicel, about 2·2 cm. long, 6 mm. in diameter.

HABITAT : North-Western Yunnan ; Mekong—Salween Divide. In open pine forests and on cliffs and in rhododendron thickets at 11,000-14,000 ft. altitude.

R. colletum differs from its very near ally *R. Beesianum* in its smaller narrower leaves, more tapered at base, and in its thinner petioles.

RHODODENDRON DICTYOTUM, *Balf. f. MS.* (descript. *Tagg*) in *Notes R.B.G. Edin.*, vol. 15 (1927), 309.

Illustration—

Habit : a shrub of 9-12 ft. ; branches below inflorescences ·5-1 cm. diameter ; young shoots at first sparsely floccose, later glabrous.

Leaves : lamina oblong-elliptic, oblong-lanceolate or oblanceolate, 5-12 cm. long, 2·5-5 cm. broad ; apex broadly obtuse ; base rounded ; upper surface at maturity glabrous, minutely rugulose, midrib grooved, primary veins 14-16 on each side inconspicuous ; under surface tawny brown, clad with a loose felty indumentum which is easily rubbed off, midrib prominent, paler, less densely clad with indumentum, rest of venation concealed ; petiole 1·5-2 cm. long, grooved above, glabrescent.

Inflorescence : a loose racemose truss of 8-15 flowers; rhachis about 1 cm. long, sparsely-pubescent.

Pedicels : about 2 cm. long, glabrous or sparsely pubescent.

Calyx : small, about 2 mm. long, with a rim of 5 short triangular lobes, fringed with floccose hairs.

Corolla : campanulate, 4-5 cm. long, whitish faintly flushed rose on margins with copious crimson spots on the posterior side.

Stamens : 10, unequal, 1·5-2·5 cm. long ; filaments densely hairy at base.

Pistil : 3·5 cm. long, slightly longer than corolla tube ; ovary 7 mm. long, densely floccose, 6-chambered ; style glabrous.

Capsule : cylindric, straight, blunt, 1·3 cm. long, 5 mm. broad, purplish-black with vestiges of ovary hairs.

Habitat : South-Eastern Tibet ; Mekong—Salween and Salween—Kiu chiang Divides. Open pine forests and rhododendron thickets at 11,000-13,000 ft. altitude.

Amongst those members of the Lacteum series characterised by a densely floccose ovary, *R. dictyotum* is distinguished at once by the very numerous spots on the white corolla. The indumentum is thicker and darker than that of its immediate allies.

RHODODENDRON DRYOPHYLLUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 58.

Illustration—

Habit : a shrub as much as 9 ft. high with straight branches ; year-old branches about 3 mm. thick, clad with a buff-coloured thin indumentum.

Leaves : lamina leathery, oblong-elliptic or oblong-lanceolate, 9-14 cm. long, 2·5-3·5 cm. broad ; apex obtuse or narrowed to a shortly acuminate tip ; base cuneate or obtuse ; upper surface glossy, glabrescent, midrib grooved, primary veins indistinct, about 18 on each side ; under surface yellow or buff, smooth, clad with a suède-like indumentum, midrib prominent, rest of venation concealed ; petiole 1-2 cm. long, grooved above, clad with a thin indumentum like the twigs.

Inflorescence : a racemose umbel of about 15 flowers ; rhachis 1 cm. or less long, floccose.

Pedicels : 2-2·5 cm. long, thin, floccose-pubescent.

Calyx : small, about 2 mm. long ; lobes 5, ovate or rounded, with a few minute marginal hairs.

Corolla : funnel-campanulate, about 4 cm. long, white tipped or flushed rose with a few crimson markings, puberulous inside ; lobes 5, rounded, emarginate, about 1·8 cm. long, 2·2 cm. broad.

Stamens : 10, unequal, 1·5-2·5 cm. long ; filaments sparsely puberulous at the base.

Pistil : about 3·5 cm. long ; ovary thin, about 6 mm. long, cylindric, grooved, truncate, glabrous, 6-chambered ; style glabrous.

Capsule :

Habitat : North-Western Yunnan ; Mekong—Salween Divide. In open pine forests at 11,000-14,000 ft. altitude.

R. dryophyllum is akin to *R. levistratum* but has a glabrous ovary. The flower of *R. levistratum* is smaller in all its parts.

RHODODENDRON DUMOSULUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 41.

Illustration—

Habit : a shrub of 2-3 ft. ; branches nodular, annual growths short, shoots below inflorescences about 5 mm. in diameter, at first clad with indumentum, later glabrous.

Leaves : lamina leathery, 4-8 cm. long, 1-2 cm. broad, oblong-elliptic to lanceolate ; apex obtuse or rounded ; base rounded ; upper surface slightly rugulose, midrib grooved, primary veins about 15 on each side slightly impressed ; under surface clad with a rusty to greyish non-agglutinate indumentum with a suède-like compact surface inclined to split ; petiole about 1 cm. long.

Inflorescence : a small umbel of about 8 flowers ; rhachis very short.

Pedicels : about 8 mm. long, thin, sparsely floccose-pubescent.

Calyx : small, about 1 mm. long, with 5 small floccose-fimbriate teeth.

Corolla : obliquely funnel-shaped, 2 cm. long, 3 cm. across, white faintly flushed rose with copious crimson spots on the posterior side ; lobes 5, about 1 cm. long, 1·5 cm. broad, emarginate.

Stamens : 10, unequal, 1-1·5 cm. long, shorter than pistil ; filaments hairy at base.

Pistil : about 2 cm. long ; ovary 4 mm. long, conoid, glabrous or very sparsely puberulous, 6-chambered ; style glabrous, slightly expanded below the small lobulate stigma.

Capsule :

Habitat : North-Western Yunnan ; Mekong—Salween Divide. On open moorlands at 13,000 ft. altitude.

R. dumosulum is the smallest species of the series and is a native of open moorlands. Its dwarf habit, in consonance with its habitat, and its narrow revolute leaves and small flowers serve to distinguish it.

RHODODENDRON EMACULATUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 42.

Illustration—

Habit : a shrub of 6-7 ft., branches below inflorescences about 7 mm. in diameter, at first thinly floccose, later glabrescent.

Leaves : lamina oblong oblanceolate, 6-12 cm. long, 2-3·5 cm. broad ; apex shortly acuminate ; base wedge-shaped or blunt ; upper surface glabrescent, minutely rugulose, midrib grooved, primary veins about 12 on each side slightly grooved ; under surface grey, clad with a thin smooth indumentum, midrib prominent, primary veins slightly raised ; petiole thin, about 1·5 cm. long, thinly floccose or glabrous.

Inflorescence : an umbel of about 10 flowers ; rhachis short, floccose.

Pedicels : about 2 cm. long, floccose.

Calyx : small, sparsely floccose.

Corolla : campanulate, about 4 cm. long, deep magenta-rose without markings ; lobes 5, 1·5 cm. long, 2 cm. broad, emarginate.

Stamens : 10, unequal, 1·7-2·5 cm. long ; filaments puberulous at base.

Pistil : 3·5 cm. long ; ovary 5 mm. long, 8-chambered, densely floccose-tomentose ; style glabrous.

Capsule :

Habitat : South-Eastern Tibet ; Tsarong, Doker-la, Mekong —Salween Divide. In open thickets at 13,000 ft. altitude.

Very near to *R. colletum*, differing in the grey indumentum, the deep colour of the corolla, and the complete absence of spots. Like *R. colletum*, it may be regarded as a geographical form of *R. Beesianum*.

RHODODENDRON LACTEUM, *Franch.* (Modified copy of t. 8988 in *Bot. Mag.*)

A. Flowering shoot (about ⅔ natural size). B and G. Hairs from the ovary (much enlarged). C. Anther. D and E. Indumentum hairs of leaf under surface (much enlarged). F. Pistil. H. Lower part of filament.

RHODODENDRON LACTEUM, *Franch.* in *Bull. Soc. Bot. France*, vol. 33 (1886), 231.

(R. Mairei, *Lévl.*)

Illustration—*Bot. Mag.*, vol. 149 (1923), t. 8988.

Habit: a tree of 15-30 ft.; branches stout, more or less nodular with conspicuous scars of fallen leaves; shoots below inflorescences as much as 1 cm. in diameter, clad with a thin fawn indumentum which is detersile.

Leaves: lamina thick, leathery, oblong-elliptic, broadest slightly above the middle, 10-17 cm. long, 6-8 cm. broad; apex rounded with a short acuminate tip; margin somewhat undulate; base cordate or cordulate; upper surface minutely rugulose, at maturity glabrous or with hair vestiges, midrib deeply grooved, primary veins 16-18 on each side slightly impressed; under surface dull fawn, clad with a uniform thin suède-like indumentum, midrib prominent, primary veins slightly raised; petiole 2·5 cm. long, grooved above, at first thinly floccose, later glabrescent.

Inflorescence: a large racemose umbel (15-20 cm. across) of 20-30 flowers; rhachis about 3 cm. long, floccose-pubescent.

Pedicels: 2-3 cm. long, thinly floccose.

Calyx: very small, with 5 minute teeth.

Corolla: widely campanulate with rounded base, about 4·5 cm. long, creamy white to a clear canary yellow, unspotted; lobes 5, about 1·5 cm. long, 2·5 cm. broad, emarginate.

Stamens: 10, unequal, 1·5-2·5 cm. long; filaments puberulous at base.

Pistil: 3 cm. long; ovary 7 mm. long, conoid, floccose-tomentose; style glabrous; stigma small, lobulate.

Capsule: curved, about 3 cm. long, 5 mm. broad, clad with remains of the ovary indumentum, 10-chambered.

Habitat: Yunnan; western and eastern flanks of the Tali Range; also in North-Western and North-Eastern Yunnan. In rhododendron forests at 12,000 ft. altitude.

This is distinguished from the other Chinese members of the subseries, such as *R. Beesianum*, by its yellow flowers and large broadly oblong leaves with cordate base. The North-Eastern Yunnan plant described as *R. Mairei* is the same as the Tali plant.

RHODODENDRON LEVISTRATUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 88.

(R. HELVOLUM, *Balf. f. & Forrest*;
R. VICINUM, *Balf. f. & Forrest.*)

ILLUSTRATION—

HABIT: a shrub of 6-10 ft.; branches at first clad with a thin cinnamon indumentum, later glabrescent; shoots below inflorescences about 5 mm. in diameter.

LEAVES: lamina leathery, lanceolate, oblanceolate or oblong-elliptic, 5-9 cm. long, 2-3·5 cm. broad; apex acute or shortly acuminate; base obtuse; upper surface somewhat glossy, midrib grooved, primary veins 12-14 on each side inconspicuous; under surface ochre-buff to cinnamon, often minutely stippled whitish, clad with a thin smooth compact suède-like indumentum, the hair branches interlocked but not agglutinate.

INFLORESCENCE: a racemose umbel of about 15 flowers; rhachis about 1 cm. long, finely pubescent.

PEDICELS: about 2 cm. long, pubescent-floccose.

CALYX: about 1 mm. long, with 5 minute puberulous lobes.

COROLLA: campanulate, about 3 cm. long, white or white-flushed rose, without basal blotch but copiously spotted crimson; lobes 5, about 1·2 cm. long, 2 cm. broad, crenulate.

STAMENS: 10, unequal, 1·3-2 cm. long, finely puberulous at base.

PISTIL: about 2·5 cm. long; ovary conoid, 4-5 mm. long, sparsely pubescent and floccose, 6-chambered; style glabrous.

CAPSULE:

HABITAT: North-Western Yunnan; mountains north of Atuntzu. In open situations and thickets at 12,000-14,000 ft. altitude.

R. levistratum differs from *R. Traillianum* mainly in its leaf shape and indumental characters. *R. helvolum* and *R. vicinum* are forms of it, showing slight deviations in the structure of the hairs which form the under leaf indumentum. *R. aiolopeplum* is a close ally of this species but differs from it in the somewhat longer narrower leaves and unspotted corolla.

RHODODENDRON NAKOTILTUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 12 (1920), 143.

Illustration—

Habit : a shrub of 6-12 ft. with stout branches ; year-old branches about 5 mm. in diameter, whitish-floccose, older branches glabrescent.

Leaves : lamina oblong or obovate-oblong, 6·5-11 cm. long, 2·5-3·5 cm. broad ; apex broadly acuminate ; base broadly obtuse ; upper surface at first clad with floccose hairs, later glabrescent, midrib grooved, primary veins about 12 on each side ; under surface clad with a thin grey felty indumentum, midrib raised, primary veins obscure ; petiole slightly winged, grooved above, about 2 cm. long, floccose.

Inflorescence : a compact terminal umbel of about 12-15 flowers.

Pedicels : about 2 cm. long, floccose-pubescent.

Calyx : small, about 1·5 mm. long ; lobes 5, glabrous on the back, and with few marginal hairs.

Corolla : openly campanulate, slightly oblique, 3·5 cm. long, pale rose with a posterior basal blotch and spotted ; lobes 5, short and broad, 1·2 cm. long, 2·2 cm. broad, emarginate and undulate.

Stamens : 10, unequal, 1·3-2·4 cm. long ; filaments densely puberulous.

Pistil : about 2·8 cm. long ; ovary 5 mm. long, cylindric, truncate, grooved, tomentose with fasciate adpressed hairs, 8-chambered ; style glabrous.

Capsule :

Habitat : North-Western Yunnan ; Mekong—Salween Divide. In pine forests at 11,000-12,000 ft. altitude.

Among the members of the series with distinctly floccose or tomentose ovaries, *R. nakotiltum* differs from *R. Beesianum* and *R. colletum* in its smaller leaves with thicker bistrate indumentum which has a loosely felty surface. From *R. emaculatum* it is distinguished by its indumentum and the blotch at base of corolla, and from *R. aberrans* and *R. dictyotum* by the character and colour of the indumentum.

RHODODENDRON SIGILLATUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1922), 294.

(R. INTORTUM, *Balf. f. & Forrest.*)

ILLUSTRATION—

HABIT: a shrub of 6-12 ft.; branchlets a year old about 4 mm. in diameter, at first tawny-tomentose, later glabrescent.

LEAVES: lamina oblong-elliptic, oval or oblong-obovate, 6-9 cm. long, 2·5-4 cm. broad; apex broadly obtuse or rounded; base broadly obtuse or rounded; upper surface at maturity glossy, glabrous, minutely rugulose, midrib grooved, primary veins about 15 on each side slightly impressed; under surface paler or darker buff, clad with a smooth suède-surfaced indumentum, midrib prominent, rest of venation concealed; petiole about 1 cm. long, grooved and tomentose like the young shoots.

INFLORESCENCE: a racemose umbel of about 10 flowers; rhachis 8 mm. long, thinly tomentose.

PEDICELS: about 1·5 cm. long, sparsely floccose.

CALYX: very small, about 1 mm. long, obscurely 5-lobed, more or less pubescent.

COROLLA: funnel-campanulate, 3·5 cm. long, white with crimson markings on the posterior side; lobes 5, rounded, 1 cm. long, 1·5 cm. broad, emarginate and crenulate.

STAMENS: 10, unequal, 1·5-2·3 cm. long; filaments puberulous at base.

PISTIL: about 2·5 cm. long, barely exceeding the longest stamens; ovary narrow conoid, about 5 mm. long, glabrous or with a few short simple hairs, 5-chambered; style glabrous.

CAPSULE:

HABITAT: North-Western Yunnan; Mekong — Salween Divide. In open pine forests at 12,000 ft. altitude.

R. sigillatum comes near to *R. dryophyllum* in its flowers and in its glabrous ovary, but its leaves are broad in proportion to their length and the ends are more or less rounded. *R. intortum* is an imperfectly known form differing slightly in its indumental characters.

RHODODENDRON TRAILLIANUM, *G. Forrest & W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 8 (1914), 204.

(R. THEIOPHYLLUM, *Balf. f. & Forrest.*)

ILLUSTRATION—

HABIT : a shrub or small tree of 10-30 ft. ; young shoots grey to fawn floccose, older wood glabrous ; branchlets below inflorescences about 7 mm. in diameter.

LEAVES : lamina elliptic to broadly oblong-oblanceolate or lanceolate, 6-11 cm. long, 2-4 cm. broad ; apex obtuse or shortly acuminate ; base obtuse or rounded (in some forms more or less cordulate) ; upper surface glabrous at maturity, minutely rugulose, midrib grooved, primary veins about 14 on each side impressed ; under surface greenish-grey to dull tawny, clad with a suède-like indumentum, midrib prominent, the rest of venation obscure ; petiole 1·5-2·5 cm. long, at first floccose like the young shoots.

INFLORESCENCE : a racemose umbel of 10-15 flowers ; rhachis about 1 cm. long, floccosely-pubescent.

PEDICELS : thin, about 2 cm. long, densely floccose.

CALYX : about 1 mm. long, with 5 small floccose fimbriate lobes.

COROLLA : funnel-campanulate about 3·5 cm. long, white or white-flushed rose with deep crimson spots ; lobes 5, rounded, 1-1·5 cm. long, 2 cm. broad, deeply emarginate.

STAMENS : 10, unequal, 1·2-2·5 cm. long ; filaments hairy at base.

PISTIL : 3 cm. long ; ovary 5 mm. long, conoid, truncate, grooved, glabrous, pubescent with simple hairs, or very sparsely floccose, 8-9-chambered ; style glabrous.

CAPSULE :

HABITAT : North-Western Yunnan ; western and eastern flanks of the Lichiang Range and extending northward to Yungning and Muli and north-west to the Chungtien Plateau. In rhododendron forests at 11,000-12,000 ft. altitude.

R. Traillianum has close kinship with *R. Beesianum* and its allies in the non-agglutinate and readily diffusible hairs of the leaf indumentum, but deviates in the shape of these hairs and in lacking the densely tomentose covering of the ovary. The leaf shape and size is variable, but the leaf is never so large as that of *R. lacteum*. Typically the ovary is glabrous but forms occur with a few floccose hairs on the ovary. These forms lead to *R. aberrans*, a species with a distinctly floccose and more or less glandular ovary. *R. theiophyllum* is a form with relatively broader and shorter leaves and a slightly different leaf indumentum. In the absence of flowering specimens it is here treated as a northern equivalent of *R. Traillianum*.

RHODODENDRON WIGHTII, *Hook. f.* in *Rhodo. Sikkim Himal.* (1851).

Illustrations—*Rhodo. Sikkim Himal.* (1851), t. 27; *Gard. Chron.*, 3rd ser., vol. 50 (1911), 268; *Bot. Mag.*, vol. 139 (1913), t. 8492.

Habit: a small tree; branches thick, those a year old below inflorescences about 1 cm. in diameter, greyish-floccose, older shoots glabrous.

Leaves: lamina leathery, oblong elliptic to oblong-obovate or oblanceolate, 12-18 cm. long, 5-7 cm. broad; apex obtuse or broadly and shortly acuminate; base rhomboid or semi-rounded; upper surface bright green, minutely rugulose, midrib grooved, primary veins 12-14 on each side deeply grooved; under surface pale or deep cinnamon or rufous, or at times greyish (young leaves almost white), clad with a thin uniform adpressed indumentum, midrib prominently raised, paler, glabrescent, primary veins prominent; petiole 1·5-2·5 cm. long, greyish-floccose.

Inflorescence: a large rounded somewhat lax umbel of 12-20 flowers, at first surrounded at base by hard, very viscid bud-scales, which are more or less persistent during flowering; rhachis short.

Pedicels: 3-4 cm. long, fulvous-tomentose or in some forms more or less glandular.

Calyx: very small, with 5 short teeth.

Corolla: campanulate, broad at base, pale yellow, heavily blotched crimson at the base and copiously spotted crimson on the posterior side, 4-4·5 cm. long; lobes 5, about 1·5 cm. long, 2 cm. broad, deeply notched.

Stamens: 10, 2-3 cm. long; filaments pubescent at base.

Pistil: about 3 cm. long; ovary conoid, 7 mm. long, densely tomentose; style glabrous; stigma discoid.

Capsule: cylindric, slightly curved, blackish, with few vestiges of hairs, 10-chambered.

Habitat: Eastern Himalaya; Sikkim, Nepal, Bhutan. In wooded valleys and on spurs of mountains at 12,000-14,000 ft. altitude.

R. Wightii is the only Himalayan member of the series but in its characters it links up closely to *R. lacteum*, which, however, has more broadly elliptic leaves and unspotted flowers.

LAPPONICUM SERIES

General Characters :—Dwarf shrublets rarely a few feet high sometimes forming a matted growth ; branchlets usually very short, densely scaly or rarely bristly ; leaf-bud-scales early deciduous. Leaves very small, evergreen, densely scaly below. Inflorescence terminal, usually very few-flowered, rarely capitate ; flower-bud-scales usually early deciduous. Flowers mostly mauve, pink or purplish, rarely yellow ; flower-stalks very short. Calyx usually small. Corolla openly funnel-shaped or rarely tubular. Stamens 10-5, usually long-exserted, rarely included in the tube. Ovary 5-celled, densely scaly ; style glabrous or pubescent towards the base. Capsule very short, scaly.

Distribution :—Mainly at high altitudes in the mountains of Yunnan and Szechuan, rare in the Eastern Himalaya, absent from Central and Eastern China, one in Lapland, and one in North-Eastern Asia.

A large natural group of low-growing shrublets often forming extensive carpets over the landscape in Western China. The following key has been drawn up from the available material, but it is realized that some of the characters relied upon for distinguishing certain species may not be very constant.

The series apparently represents the culmination of development in response to environment, and has perhaps descended from the *Anthopogon*, *Cephalanthum*, *Lepidotum*, *Saluenense* stocks. The highest evolved species is probably *R. intricatum* with short included stamens.

J. H.

LAPPONICUM SERIES

KEY TO THE SPECIES

A. Flowers yellow :
B. Style pubescent ; stamens 10 :
C. Scales on lower surface of leaves not contiguous, half to their own diameter apart . . . . **flavidum.**
C. Scales on lower surface of leaves contiguous . **muliense.**
B. Style glabrous ; stamens less than 10 :
C. Stamens 8 ; inflorescence 1-flowered . **chamaezelum.**
C. Stamens 5 ; inflorescence 4-5-flowered . . **chryseum.**

A. Flowers not yellow :
B. Style pubescent in the lower part :
C. Inflorescence about 10-flowered . . . **cantabile.**
C. Inflorescence 4-5-flowered :
D. Calyx glabrous outside . . . . **russatum.**
D. Calyx scaly outside . . . . . **ravum.**
C. Inflorescence 1-2-flowered :
D. Calyx fringed with hairs . . . **Websterianum.**
D. Calyx fringed with scales :
E. Calyx cupular, scarcely lobed ; stamens 10 . **alpicola.**
E. Calyx large, deeply lobed ; stamens 8 . . **paludosum.**
B. Style glabrous :
C. Corolla not scaly outside :
D. Corolla-tube softly pubescent outside . **dasypetalum.**
D. Corolla-tube glabrous outside :
E. Style very short, much shorter than the stamens :
F. Stamens 10 :
G. Stamens exserted from the corolla-tube :
H. Scales on lower surface of leaves not contiguous **lysolepis.**
H. Scales on lower surface of leaves contiguous or overlapping :
I. Leaves about $\frac{1}{2}$ in. long, oblanceolate **orthocladum.**
I. Leaves $\frac{1}{4}$-$\frac{1}{3}$ in. long :
J. Leaves narrowly oblanceolate . **thymifolium.**
J. Leaves broadly elliptic . . **ramosissimum.**
G. Stamens included in the corolla-tube ; scales on lower surface of leaves overlapping . . **intricatum.**
F. Stamens 5 :
G. Leaves oblong-elliptic, $\frac{1}{2}$ in. long ; calyx not fringed with hairs, scaly outside . . **blepharocalyx.**
G. Leaves broadly elliptic, $\frac{1}{4}$ in. long ; calyx fringed with hairs, glabrous outside . . **complexum.**
E. Style as long as, or longer than, the stamens :
F. Stamens glabrous :
G. Inflorescence 3-flowered ; leaves $\frac{1}{3}$-$\frac{1}{2}$ in. long **lapponicum.**
G. Inflorescence 1-flowered ; leaves $\frac{1}{4}$ in. long **stictophyllum.**
F. Stamens pubescent :
G. Calyx $\frac{1}{4}$-$\frac{1}{3}$ in. long :

H. Branchlets densely setose; leaves $\frac{1}{3}$-$\frac{1}{2}$ in. long, densely setose below . . . . **setosum.**
H. Branchlets scaly; leaves 1 in. long, not setose below **cuneatum.**
G. Calyx much shorter than above:
H. Leaves over 1 in. long, narrowly oblanceolate; scales overlapping below, uniform and pale grey **hippophaeoides.**
H. Leaves under 1 in. long:
I. Calyx fringed with hairs:
J. Leaves $\frac{1}{2}$-$\frac{3}{4}$ in. long:
K. Scales on lower surface of leaf not contiguous; calyx well developed:
L. Flowers plum-purple; flower-bud-scales subpersistent . . . . . **litangense.**
L. Flowers mauve or light purplish-blue; flower-bud-scales soon falling off . . **impeditum.**
K. Scales on lower surface of leaves contiguous or overlapping; calyx very short:
L. Flower-stalks softly puberulous and scaly **tapetiforme.**
L. Flower-stalks only scaly . . **parvifolium.**
J. Leaves $\frac{1}{4}$-$\frac{1}{3}$ in. long:
K. Inflorescence 4-5-flowered; scales on lower surface of leaves contiguous or slightly separated **fastigiatum.**
K. Inflorescence 1-2-flowered; scales on lower surface of leaves overlapping:
L. Flower-bud-scales subpersistent; calyx-lobes scaly outside . . . **nigropunctatum.**
L. Flower-bud-scales early deciduous:
M. Calyx-lobes loosely scaly up the middle outside; leaves broadly elliptic . **Edgarianum.**
M. Calyx-lobes scarcely scaly outside; leaves oblong-oblanceolate . . **yungningense.**
I. Calyx not fringed with hairs:
J. Inflorescence about 5-flowered; corolla narrowly funnel-shaped; calyx $\frac{1}{8}$ in. long, glabrous **capitatum.**
J. Inflorescence 1-3-flowered; corolla widely funnel-shaped; calyx scaly outside:
K. Calyx $\frac{1}{8}$ in. long; leaves broadly elliptic **nitidulum.**
K. Calyx very short:
L. Flower-bud-scales more or less persistent:
M. Scales on lower surface of leaves contiguous or slightly overlapping . . . **scintillans.**
M. Scales on lower surface of leaves much overlapping . . . . . **polifolium.**

L. Flower-bud-scales early deciduous :
M. Leaves elliptic, $\frac{1}{2}$ in. long . **polycladum.**
M. Leaves narrowly oblong-elliptic, $\frac{1}{3}$ in. long **violaceum.**

C. Corolla scaly outside the lobes :
D. Style not overtopping the stamens ; scales on lower surface of leaves overlapping, rich brown, with a few larger darker ones ; stamens 10 . **drumonium.**
D. Style overtopping the stamens :
E. Stamens 10 :
F. Stamens pubescent :
G. Calyx lobes fringed with hairs ; inflorescence 2-5-flowered :
H. Leaves $\frac{1}{4}$ in. long ; inflorescence 2-flowered **idoneum.**
H. Leaves $\frac{1}{2}$ in. long ; inflorescence 3-5-flowered **rupicola.**
G. Calyx lobes not fringed ; inflorescence 1-flowered :
H. Leaves oblanceolate ; erect shrublet **telmateium.**
H. Leaves elliptic ; low prostrate matted shrublets :
I. Branchlets prostrate ; calyx well developed, $\frac{1}{8}$ in. long ; leaves very small, less than $\frac{1}{4}$ in. long **nivale.**
I. Branchlets not prostrate ; calyx $\frac{1}{12}$ in. long ; leaves larger, $\frac{1}{4}$ in. or more long, light yellowish-brown below . . . . . **diacritum.**
F. Stamens glabrous . . . . **stictophyllum.**
E. Stamens less than 10 :
F. Stamens 7-8 ; inflorescence 1-flowered ; scales on lower surface of leaves half their own diameter apart **verruculosum.**
F. Stamens 5-6 ; inflorescence 3-flowered ; scales on lower surface of leaves overlapping . **achroanthum.**

Imperfectly known species : **Amundsenianum,** *Hand-Mazz.*

RHODODENDRON ACHROANTHUM, *Balf. f. & W. W. Sm.*

(R. PROPINQUUM, *Balf. f. & Ward.*)

ILLUSTRATION—

HABIT : small shrub 2 ft. high ; branchlets very short, densely scaly ; leaf-bud-scales early deciduous.

LEAVES : oblong-elliptic, $\frac{2}{3}$ in. long, $\frac{1}{4}$ in. broad, densely scaly on both surfaces, the scales below much overlapping, brown and green ; leaf-stalks scaly.

INFLORESCENCE : terminal, *3-flowered* ; flower-stalks very short, scaly.

FLOWERS : dull deep *magenta-red.*

CALYX : well developed, $\frac{1}{8}$ in. long, lobes broadly elliptic, densely scaly except towards the purplish hair-fringed margin.

COROLLA : openly funnel-shaped, $\frac{1}{2}$ in. long, scaly outside the lobes, shortly villous within.

STAMENS : 5 or 6, exserted, villous towards the base.

OVARY : densely scaly ; style longer than the stamens, *glabrous.*

CAPSULE :

HABITAT : Yunnan, mountains of the Chungtien Plateau, 12,000-13,000 ft., on open cliffs.

RHODODENDRON ALPICOLA, *Rehd. & Wils.*

(R. OREINUM, *Balf. f.*)

ILLUSTRATION—

HABIT : shrub up to 3 ft. high ; branchlets very short and intricate, densely scaly ; leaf-bud-scales early deciduous.

LEAVES : elliptic, $\frac{1}{4}$ in. long, densely scaly on both surfaces, the scales below overlapping ; leaf-stalks scaly.

INFLORESCENCE : terminal, *1-flowered* ; flower-bud-scales early deciduous ; flower-stalks very short.

FLOWERS : lavender-purple.

CALYX : cupular, densely scaly on the margin, about $\frac{1}{12}$ in. long.

COROLLA : funnel-shaped, about $\frac{1}{2}$ in. long, not scaly outside.

STAMENS : 10, exserted, pubescent towards the base.

OVARY : scaly ; style shorter than the stamens, *pubescent* in the lower part.

CAPSULE :

HABITAT : Western Szechuan, north of Tachienlu, 12,000-15,000 ft., moorlands.

RHODODENDRON BULU, *Hutchinson, n. sp.*

ILLUSTRATION—

HABIT : a small erect shrub about 18 in. high ; stems covered with grey splitting bark ; branchlets short and twiggy, densely covered with scales.

LEAVES : oblong-elliptic, very slightly narrowed at the base, rounded at the apex and slightly mucronate, about $\frac{1}{2}$ in. long and $\frac{1}{4}$ in. broad, very densely covered on both surfaces with yellowish scales, the scales impressed above and contiguous, overlapping below with scattered brown scales here and there ; leaf-stalks $\frac{1}{10}$ in. long.

INFLORESCENCE : 2-3-flowered, terminal ; bud-scales subpersistent during flowering, densely scaly outside and fringed with soft white hairs ; flower-stalks very short (about $\frac{1}{2}$ in.) and scaly.

FLOWERS : pure white.

CALYX : well developed, densely scaly outside ; lobes unequal, oblong, scaly, but not fringed with hairs.

COROLLA : deeply 5-lobed ; tube very short, not scaly outside, but finely pubescent within the throat ; lobes scaly outside.

STAMENS : 10, exserted, unequal in length, shortly pubescent nearly at the base.

OVARY : 5-celled, scaly ; style longer than the stamens, thinly scaly towards the base.

CAPSULE : not seen.

HABITAT : Lusha, 10,000 ft., in birch copse with masses of a purple-flowered species, 19th May 1924, *Ward* 5686 (type). (Dried specimen only.)

Although white-flowered "rogues" are known in the *Lapponicum* series, I believe that a real wild white-flowered species is still a *desideratum*. If that be so, here it is in *R. Bulu*, for which I have used the vernacular name given by Ward.

J. H.

RHODODENDRON BLEPHAROCALYX, *Franch.*

ILLUSTRATION—

HABIT : erect shrublet ; branchlets densely scaly ; leaf-bud-scales early deciduous.

LEAVES : narrowly oblong-elliptic, about $\frac{1}{2}$ in. long, $\frac{1}{4}$ in. broad, densely scaly on both surfaces, the scales below slightly overlapping, uniform, pale yellowish-green ; leaf-stalks scaly.

INFLORESCENCE : terminal, 3-4-flowered ; flower-stalks very short, scaly ; flower-bud-scales persistent.

FLOWERS : mauve.

CALYX : rather small, scaly outside.

COROLLA : narrowly tubular, $\frac{1}{3}$ in. long, not scaly outside, shortly pubescent within.

STAMENS : 5, included, glabrous.

OVARY : scaly ; style very short, shorter than the ovary, glabrous.

CAPSULE :

HABITAT : Eastern Tibet.

RHODODENDRON CANTABILE, *Balf. f.*

Illustration—Hutchinson in *Bot. Mag.*, t. 8963 (1922).

Habit : small shrub up to 3 ft. high ; branchlets finely lepidote ; leaf-bud-scales early deciduous.

Leaves : oblong or ovate-elliptic, rounded at the base, about 1 in. long and $\frac{1}{2}$ in. broad, densely scaly on both surfaces, the scales below slightly imbricate, rusty or yellow ; leaf-stalks scaly.

Inflorescence : terminal, globose, about *10-flowered* ; flower-stalks very short, scaly.

Flowers : dark violet.

Calyx : $\frac{1}{6}$ in. long, almost glabrous outside, fringed with weak hairs.

Corolla : openly funnel-shaped, about $\frac{3}{4}$ in. long, not lepidote outside.

Stamens : 10, long-exserted, villous towards the base.

Ovary : scaly ; style laxly pilose in the lower half, slightly exceeding the stamens, red.

Capsule :

Habitat : Yunnan, mountains north-east of Chungtien, 14,000 ft., open alpine pasture and on cliffs.

RHODODENDRON CAPITATUM, *Maxim.*

Illustration—

Habit : small shrub up to 3 ft. high ; branchlets densely scaly ; leaf-bud-scales early deciduous.

Leaves : elliptic, about $\frac{2}{3}$ in. long, densely scaly on both surfaces, the scales below subcontiguous and of two kinds, larger pale ones and smaller dark brown ones ; leaf-stalks scaly.

Inflorescence : terminal, about 5-flowered ; flower-stalks very short, scaly.

Flowers : mauve.

Calyx : well developed, $\frac{1}{8}$ in. long, neither scaly outside nor fringed with hairs.

Corolla : narrowly funnel-shaped, not scaly outside.

Stamens : 10, exserted, villous in the lower part.

Ovary : scaly ; style as long as the stamens, glabrous.

Capsule : ovoid, scaly.

Habitat : Kansu.

RHODODENDRON CHAMAEZELUM, *Balf. f. & Forrest.*

Illustration—

Habit : matted shrub 6-8 in. high ; branchlets very short, densely scaly ; leaf-bud-scales early deciduous.

Leaves : elliptic, $\frac{1}{4}$ in. long, densely scaly on both surfaces, the scales overlapping below and rusty-red ; leaf-stalks scaly.

Inflorescence : terminal, 1-flowered ; flower-bud-scales early deciduous ; flower-stalks $\frac{1}{12}$ in. long, scaly.

Flowers : yellow.

Calyx : very small, lobes densely scaly all over the outside.

Corolla : openly funnel-shaped, $\frac{1}{2}$ in. long, slightly scaly outside the lobes.

Stamens : 8, exserted, villous towards the base.

Ovary : densely scaly ; style longer than the stamens, glabrous.

Capsule :

Habitat : North-Western Yunnan, Mekong—Salween Divide, 12,000 ft.

RHODODENDRON CHRYSEUM, *Balf. f. & Ward.*

ILLUSTRATION—

HABIT : small shrub 1-2½ ft. high ; branchlets densely scaly ; leaf-bud-scales early deciduous.

LEAVES : aromatic, ovate-elliptic, about ½ in. long and ⅓ in. broad, densely scaly on both surfaces, the scales below contiguous ; leaf-stalks scaly.

INFLORESCENCE : terminal, 4-5-flowered , flower-bud-scales early deciduous ; flower-stalks densely scaly.

FLOWERS : *bright yellow.*

CALYX : well developed, ⅙ in. long, lobes scaly outside and fringed with short hairs.

COROLLA : open, ½ in. long, scaly outside the lobes.

STAMENS : *5*, long-exserted, villous towards the base.

OVARY : scaly ; style *glabrous.*

CAPSULE :

HABITAT : Yunnan, Mekong—Salween Divide, 12,000-14,000 ft., open grassy slopes.

RHODODENDRON COMPLEXUM, *Balf. f. & W. W. Sm.*

Illustration—

Habit : matted shrublet 1-2 ft. high ; branchlets very short, scaly ; leaf-bud-scales early deciduous.

Leaves : broadly elliptic, very small, $\frac{1}{4}$ in. long, densely scaly on both surfaces, the scales overlapping below, uniform in size, brown ; leaf-stalks scaly.

Inflorescence : terminal, 3-flowered ; flower-stalks very short, scaly.

Flowers : deep rose-purple.

Calyx : rather small, lobes glabrous outside, fringed with hairs.

Corolla : openly funnel-shaped, $\frac{1}{2}$ in. long, not scaly outside.

Stamens : 5, included, slightly puberulous towards the base.

Ovary : scaly ; style very short, much shorter than the stamens, glabrous.

Capsule :

Habitat : Yunnan, Chungtien Plateau, 11,000-12,000 ft., open stony pastures.

RHODODENDRON COMPACTUM, *Hutchinson* in *Gard. Chron.*, vol. XCI. (1932), 326.

ILLUSTRATION—

HABIT : small shrub ; branches with scattered leaves in the upper part, densely covered with small brown scales ; leaf-bud-scales very early deciduous.

LEAVES : on the long vigorous shoots elongate oblong-lanceolate, with a triangular apex, rather abruptly narrowed at the base, about 3 cm. long and 1 cm. broad ; smaller leaves broader in proportion, bright green above and glistening with scales, these densely overlapping and with broad membranous translucent margin and warm-brown fleshy centre, densely scaly below, the scales about a quarter to one half their own diameter apart ; scales rich brown in colour with a paler rather narrow margin ; epidermis between the scales densely papillous ; petiole about 3 mm. long, scaly.

INFLORESCENCE : terminal, 5-6-flowered ; flower-bud-scales persisting until the flowers open, densely scaly and fringed with short white hairs ; pedicels very short, densely scaly.

FLOWERS : violet-mauve.

CALYX : 5-lobed, about 2 mm. long, the lobes oblong, fringed with rather long wriggly hairs.

COROLLA : tube very short and glabrous outside, densely villous inside the throat, with downwardly directed white hairs ; lobes 5, glabrous outside, about 1 cm. long, wrinkled in bud and after opening, the outer auriculate at the base.

STAMENS : 10, long-exserted from the corolla-tube and nearly as long as the corolla ; filaments mauve, with a dense tuft of white hairs a little above the base ; anthers chocolate-brown.

PISTIL : ovary 5-celled, densely covered with pale scales ; style curved, a little exceeding the stamens, pinkish, glabrous.

CAPSULE :

HABITAT : described from a specimen grown at Kells, County Meath, Eire. Seed, G. Forrest, No. 13905 (probably North-West Yunnan).

RHODODENDRON CUNEATUM, *W. W. Sm.*

ILLUSTRATION—

HABIT : small shrub up to 4 ft. high ; branchlets very short and densely scaly ; leaf-bud-scales early deciduous.

LEAVES : fairly large for the group, elliptic, about 1 in. long and $\frac{2}{3}$ in. broad, densely scaly on both surfaces, the scales below overlapping and uniform in size and colour ; leaf-stalks $\frac{1}{6}$ in. long, densely scaly.

INFLORESCENCE : terminal, about 4-flowered ; flower-bud-scales subpersistent ; flower-stalks about $\frac{1}{2}$ in. long, loosely scaly.

FLOWERS : *deep rose.*

CALYX : large, $\frac{1}{3}$ in. long, lobes broadly elliptic, scaly up the middle outside, fringed with short hairs.

COROLLA : widely funnel-shaped, 1 in. long, not scaly outside.

STAMENS : *10,* exserted, pubescent towards the base.

OVARY : densely scaly ; style slender, longer than the stamens, *glabrous.*

CAPSULE : $\frac{1}{3}$ in. long, densely scaly, enclosed by the persistent calyx.

HABITAT : Yunnan, Lichiang Range, 11,000-12,000 ft., on limestone cliffs.

RHODODENDRON DASYPETALUM, *Balf. f. & Forrest.*

Illustration—

Habit : small shrub up to $2\frac{1}{2}$ ft. high ; branchlets scaly ; leaf-bud-scales early deciduous.

Leaves : oblong-elliptic, $\frac{2}{3}$ in. long, loosely scaly above, densely so below, the scales overlapping, uniform, light brown ; leaf-stalks scaly.

Inflorescence : terminal, 1-2-flowered ; flower-stalks $\frac{1}{12}$ in. long, scaly.

Flowers : bright purplish-rose.

Calyx : well developed, $\frac{1}{6}$ in. long, slightly *scaly* outside and *puberulous*, densely fringed with long hairs.

Corolla : openly funnel-shaped, $\frac{3}{4}$ in. long, not scaly outside but *softly pubescent* outside the tube.

Stamens : 10, shortly exserted, pubescent towards the base.

Ovary : scaly ; style long, *much longer than the stamens*, glabrous.

Capsule :

Habitat : North-Western Yunnan, on the Li-ti-ping, 11,000 ft., open stony pasture.

RHODODENDRON DIACRITUM, *Balf. f. & W. W. Sm.*

(R. PYCNOCLADUM, *Balf. f. & W. W. Sm.*)

ILLUSTRATION—

HABIT : matted shrublet up to 2 ft. high ; branchlets very short, densely scaly ; leaf-bud-scales early deciduous.

LEAVES : broadly elliptic, very small, $\frac{1}{4}$ in. long, very densely scaly on both surfaces, the scales below overlapping and light yellowish-brown ; leaf-stalks scaly.

INFLORESCENCE : terminal, 1-flowered ; flower-bud-scales early deciduous ; flower-stalks very short, scaly.

FLOWERS : deep rose-purple, with a white throat.

CALYX : $\frac{1}{12}$ in. long, densely scaly all over the outside.

COROLLA : openly funnel-shaped, $\frac{1}{3}$ in. long, scaly outside the lobes.

STAMENS : 10, exserted, densely villous towards the base.

OVARY : scaly ; style much longer than the stamens, glabrous.

CAPSULE : $\frac{1}{6}$ in. long, scaly.

HABITAT : Yunnan, mountains of the Chungtien Plateau, 13,000-14,000 ft., open situations on cliffs and humus-covered boulders.

RHODODENDRON DRUMONIUM, *Balf. f. & Ward.*

ILLUSTRATION—

HABIT : a small tufted shrub about 1 ft. high ; branchlets very short and crowded, scaly ; leaf-bud-scales early deciduous.

LEAVES : small, elliptic, $\frac{1}{4}$ in. long, densely scaly on both surfaces, the scales below a rich brown, overlapping, with a few larger and darker scales here and there ; leaf-stalks scaly.

INFLORESCENCE : terminal, 1-flowered ; flower-stalks very short, scaly.

FLOWERS : mauve.

CALYX : fairly large, about $\frac{1}{12}$ in. long, scaly all over the outside and fringed with short hairs.

COROLLA : openly funnel-shaped, nearly $\frac{1}{2}$ in. long, scaly only outside the lobes, villous within the tube.

STAMENS : 10, exserted, villous towards the base.

OVARY : scaly ; style a little shorter than the stamens, glabrous.

CAPSULE :

HABITAT : Yunnan, 10,000-12,000 ft., open stony pastures in pine forests.

RHODODENDRON EDGARIANUM, *Rehd. & Wils.*

(R. ORESBIUM, *Balf. f. & Forrest.*)

ILLUSTRATION—

HABIT : shrub up to 3 ft. high ; branchlets very short, scaly ; leaf-bud-scales early deciduous.

LEAVES : broadly elliptic, $\frac{1}{3}$ in. long, densely scaly on both surfaces, the scales below overlapping and dark reddish-brown ; leaf-stalks scaly.

INFLORESCENCE : terminal, 1-flowered ; flower-bud-scales early deciduous ; flower-stalks very short.

FLOWERS : rose-purple.

CALYX : fairy large, $\frac{1}{12}$ in. long, loosely scaly up the middle outside, fringed with hairs.

COROLLA : openly funnel-shaped, nearly $\frac{1}{2}$ in. long, not scaly outside.

STAMENS : 10, exserted, villous above the base.

OVARY : scaly ; style as long as the stamens, glabrous.

CAPSULE :

HABITAT : Western Szechuan, near Tachienlu, 12,000-15,000 ft.

RHODODENDRON FASTIGIATUM, *Franch.*

Illustration—

Habit : erect shrublet ; branchlets scaly ; leaf-bud-scales early deciduous.

Leaves : elliptic-oblanceolate, $\frac{1}{3}$ in. long, densely scaly on both surfaces, the scales below contiguous or slightly separated ; leaf-stalks densely scaly.

Inflorescence : terminal, about 4-5-flowered ; flower-bud-scales early deciduous ; flower-stalks very short, scaly.

Flowers : *light purple.*

Calyx : well developed, about $\frac{1}{6}$ in. long, lobes broadly elliptic, loosely scaly outside, fringed with long weak hairs.

Corolla : about $\frac{1}{2}$ in. long, not scaly outside.

Stamens : *10,* exserted, pubescent towards the base.

Ovary : scaly ; style slender, glabrous.

Capsule :

Habitat : Yunnan, above Ta-li.

RHODODENDRON FIMBRIATUM, *Hutchinson* in *Gard. Chron.*, xci. (1932), 438.

Illustration—

Habit : shrub with erect branches ; branchlets virgate, leafy towards the top, the younger parts yellowish-green and inconspicuously lepidote ; leaf-bud-scales early deciduous.

Leaves : lanceolate to oblong-lanceolate, somewhat rounded to the mucronate apex, narrowed at the base, 3·5-4 cm. long, 1·3-1·5 cm. broad, pale green above with overlapping membranous silvery scales, paler below and glaucous, the scales contiguous, pale yellow in the middle ; stalk about 6 mm. long, scaly.

Inflorescence : terminal shortly racemose, about 8-flowered ; flower-bud-scales very early deciduous, loosely scaly outside and fringed with weak white hairs.

Flowers : deep mauve-purple fading to almost purple.

Calyx : well developed, scaly outside ; lobes 5, ovate-triangular, ciliate.

Corolla : glabrous outside, tube campanulate, 6 mm. long, pubescent inside the throat ; lobes ovate-oblong, about 1 cm. long.

Stamens : 10, long exserted from the corolla ; filaments mauve, hairy towards the base ; anthers pale brown.

Pistil : ovary 5-celled, with a few hairs at the apex, densely scaly ; style longer than the stamens, pink, glabrous.

Capsule :

Habitat : originally described from a specimen grown at Headfort, County Meath, Eire, from seeds collected by G Forrest, seed No. 22197, probably in North-Eastern Yunnan.

RHODODENDRON FLAVIDUM, *Franch.*

(R. PRIMULINUM, *Hemsl.*)

ILLUSTRATION—Hemsley in *Bot. Mag.*, t. 8326 (1910) (as *R. primulinum*).

HABIT: small shrub, intricately branched; branchlets densely scaly; leaf-bud-scales early deciduous.

LEAVES: elliptic or oblong, bluntly mucronate, about $\frac{1}{2}$ in. long, $\frac{1}{4}$ in. broad, laxly scaly above, rather densely so below, the scales from half to their own diameter apart, glaucous between the scales; leaf-stalks scaly.

INFLORESCENCE: terminal, 3-5-flowered; flower-bud-scales early deciduous; flower-stalks $\frac{1}{8}$ in. long, scaly.

FLOWERS: *pale yellow.*

CALYX: well developed, $\frac{1}{6}$ in. long, lobes oblong-elliptic, slightly ciliate, laxly scaly outside.

COROLLA: openly funnel-shaped, $\frac{2}{3}$ in. long, glabrous outside.

STAMENS: *10*, exserted, pubescent towards the base.

OVARY: scaly; style pubescent towards the base.

CAPSULE:

HABITAT: Western Szechuan and Eastern Tibet.

RHODODENDRON HIPPOPHAEOIDES, *Balf. f. & W. W. Sm.*

ILLUSTRATION—*Gard. Chron.*, 77 : p. 94 (1925).

HABIT : Shrub about 2-3 ft., with few *rather leggy* branches.

LEAVES : scattered, spreading, *narrowly oblanceolate*, obtusely mucronate, gradually narrowed to the base, $1\frac{1}{4}$ in. long, $\frac{1}{4}$-$\frac{1}{3}$ in. broad, covered with contiguous scales above, more densely so below, the scales often *slightly overlapping*, uniform and pale grey ; leaf-stalks $\frac{1}{4}$ in. long, laxly scaly.

INFLORESCENCE : 6-8-flowered, terminal, usually compact.

FLOWERS : *pale lilac to rose*, not spotted ; stalks $\frac{1}{8}$ in. long scaly.

CALYX : 5-lobed, $\frac{1}{10}$ in. long, scaly outside, lobes ovate, subglabrous outside, fringed with scales and occasionally a few hairs.

COROLLA : with a short wide tube (hairy inside) and limb spreading nearly at right angles, not scaly, nearly 1 in. across ; lobes 5, broadly oblong, not notched, about $\frac{1}{3}$ in. long, wrinkled.

STAMENS : *10*, exserted, *alternately longer and shorter* ; filaments densely bearded just above the base ; anthers reddish-brown.

OVARY : densely scaly, 5-celled ; style glabrous, equalling the stamens.

CAPSULE :

HABITAT : Yunnan, valley of Chung River, Chungtien Plateau and Lichiang Range.

RHODODENDRON GLOMERULATUM, *Hutchinson* in *Gard. Chron.*, xci. (1932), 438.

Illustration—

Habit : small shrub with erect small branches ; annual branchlets short, leafy, densely covered with brown flake-like scales ; leaf-bud-scales early deciduous.

Leaves : ovate or ovate-elliptic, rounded at the base and emarginate at the apex, about 1·5 cm. long and 1 cm. broad, green and densely scaly above, the scales contiguous, densely scaly below, the scales slightly overlapping ; petiole 3-5 mm. long, densely scaly.

Inflorescence : terminal, girt by the persistent scales, about 6-flowered ; flower-bud scales persistent during flowering, lepidote in the middle, fringed with white hairs.

Flowers : very crowded, subsessile, light purple-mauve.

Calyx : well-developed, densely scaly outside, with short triangular lobes fringed by a few hairs, but glabrous or nearly so outside.

Corolla : about 1·5 cm. long, glabrous outside ; tube narrowly campanulate, 6 mm. long, pubescent inside the throat ; lobes oblong, 1 cm. long.

Stamens : 10, exserted, nearly as long as the corolla ; anthers chocolate-brown ; filaments pubescent towards the base, mauve.

Pistil : ovary 5-celled, densely scaly ; style a little shorter than the shorter stamens, reddish, glabrous.

Capsule :

Habitat : described from a specimen grown at Headfort, County Meath, Eire. Seed, G. Forrest, No. 21297 (probably Yunnan).

RHODODENDRON IDONEUM, *Balf. f. & W. W. Sm.*

Illustration—

Habit : a small cushion-like shrublet, up to 18 in. high ; branchlets very short, scaly ; leaf-bud-scales early deciduous.

Leaves : broadly-elliptic, $\frac{1}{4}$ in. long, densely scaly on both surfaces, the scales below overlapping, very pale yellow-green, uniform ; leaf-stalks scaly.

Inflorescence : terminal, 2-flowered ; flower-bud-scales early deciduous ; flower-stalks very short, scaly.

Flowers : deep purplish-blue, white inside the throat.

Calyx : well developed, $\frac{1}{6}$ in. long, lobes broadly elliptic, densely scaly all over the outside, fringed with long hairs.

Corolla : openly funnel-shaped, about $\frac{1}{2}$ in. long, scaly outside the lobes.

Stamens : 10, exserted, villous towards the base.

Ovary : scaly ; style longer than the stamens, glabrous.

Capsule :

Habitat : Yunnan, mountains of the Chungtien Plateau, 13,000-14,000 ft., ledges of cliffs and stony pasture.

RHODODENDRON IMPEDITUM, *Balf. f. & W. W. Sm.*

(R. SEMANTEUM, *Balf. f.*)

ILLUSTRATION—*Gard. Chron.*, 78 : Suppl., p. 41 (1925).

HABIT : low shrublet ; branchlets very short, covered with small black scales ; leaf-bud-scales early deciduous.

LEAVES : broadly elliptic, about $\frac{1}{2}$ in. long and $\frac{1}{4}$ in. broad, densely scaly on both surfaces, the scales below about half their own diameter apart, more or less uniform but some darker ; leaf-stalks $\frac{1}{12}$ in. long, scaly and slightly pilose.

INFLORESCENCE : 1-2-flowered, terminal ; flower-bud-scales soon falling off ; flower-stalks very short.

FLOWERS : mauve or light purplish-blue.

CALYX : well developed, $\frac{1}{8}$ in. long, lobes oblong, slightly scaly on the back, fringed with longish hairs.

COROLLA : openly funnel-shaped, about $\frac{2}{3}$ in. long, not scaly outside, villous inside the throat.

STAMENS : 10, long-exserted, villous towards the base.

OVARY : scaly ; style much longer than the stamens, *glabrous*.

CAPSULE : $\frac{1}{6}$ in. long, sparingly scaly.

HABITAT : Yunnan, Lichiang Range, 15,000-16,000 ft., open peaty pasture.

RHODODENDRON INTRICATUM, *Franch.*

Illustration—Hemsley in *Bot. Mag.*, t. 8163 (1907).

Habit : a small intricately-branched shrublet ; branchlets densely scaly ; leaf-bud-scales early deciduous.

Leaves : oblong-elliptic, $\frac{1}{3}$ in. long, densely scaly on both surfaces, the scales below densely overlapping and greenish-grey ; leaf-stalks densely scaly.

Inflorescence : terminal, subglobose, several-flowered ; flower-bud-scales persistent during flowering ; flower-stalks very short, scaly.

Flowers : *mauve.*

Calyx : very short, scaly outside.

Corolla : narrowly tubular, $\frac{1}{3}$ in. long, not scaly outside, tube shortly pubescent towards the base inside.

Stamens : 10, not exserted, slightly pubescent towards the base.

Ovary : densely scaly ; style very short, glabrous.

Capsule : $\frac{1}{6}$ in. long, scaly.

Habitat : Western Szechuan, around Tachienlu, 12,000-15,000 ft., in grasslands and moorlands.

RHODODENDRON LAPPONICUM, *Linn.*

ILLUSTRATION—*Bot. Mag.*, t. 3106 (1831).

HABIT : small shrublet, few inches high ; branchlets densely scaly ; leaf-bud-scales early deciduous.

LEAVES : obovate-oblanceolate, $\frac{1}{3}$-$\frac{1}{2}$ in. long, impressed scaly above, very densely scaly below, the scales overlapping ; leaf-stalks scaly.

INFLORESCENCE : terminal, about 3-flowered ; flower-bud-scales early deciduous ; flower-stalks nearly $\frac{1}{2}$ in. long, densely scaly.

FLOWERS : *purplish.*

CALYX : small, lobed, slightly scaly outside.

COROLLA : funnel-shaped, $\frac{1}{3}$ in. long, not scaly outside.

STAMENS : varying from 5 to 10, exserted, glabrous.

OVARY : scaly ; style slender, longer than the stamens, glabrous.

CAPSULE : $\frac{1}{6}$ in. long, scaly.

HABITAT : Lapland.

RHODODENDRON LITANGENSE, *Balf. f.*

ILLUSTRATION—

HABIT : small shrub 2 ft. high ; branchlets rather long, scaly ; leaf-bud-scales early deciduous.

LEAVES : oblong-elliptic, $\frac{1}{2}$ in. long, loosely scaly on both surfaces, the scales below about half their own diameter apart ; leaf-stalks scaly.

INFLORESCENCE : terminal, 1-2-flowered ; flower-bud-scales subpersistent ; flower-stalks very short, scaly.

FLOWERS : dull plum-purple.

CALYX : well developed, $\frac{1}{12}$ in. long, lobes broadly oblong, scaly towards the base outside, fringed with slender hairs.

COROLLA : nearly $\frac{1}{2}$ in. long, not scaly outside.

STAMENS : 10, exserted, villous towards the base.

OVARY : scaly ; style longer than the stamens, glabrous.

CAPSULE : $\frac{1}{6}$ in. long.

HABITAT : South-Western Szechuan, Mu-li Mountains, Valley of the Litang, 12,000-14,000 ft.

RHODODENDRON LYSOLEPIS, *Hutchinson.*

ILLUSTRATION—

HABIT: dwarf shrublet with erect rather closely scaly branchlets.

LEAVES: spreading or slightly recurved, scattered, oblong-elliptic, rounded at both ends, mucronate, $\frac{1}{2}$-$\frac{3}{4}$ in. long, $\frac{1}{6}$-$\frac{1}{5}$ in. broad, *very prominently glistening glandular-scaly above,* the scales about their own diameter apart, the scales below scarcely raised and *about* $1\frac{1}{2}$ *times their own diameter apart*; leaf-stalks $\frac{1}{16}$ in. long.

INFLORESCENCE: 3-flowered, terminal, close.

FLOWERS: *deep violet* or *pinkish violet,* nearly 1 in. in diameter; stalks very short, about $\frac{1}{16}$ in. long, loosely scaly, tinged with red.

CALYX: unequally 5-lobed, the upper (adaxial) lobe the largest, oblong, glabrous outside, with a few scales and weak hairs on the margin, up to $\frac{1}{10}$ in. long.

COROLLA: with a short tube and limb spreading at right angles, not scaly outside; lobes 5, ovate-oblong, not notched.

STAMENS: *10,* long-exserted, alternately slightly longer and shorter; filaments densely villous well above the base, violet.

OVARY: 5-celled, covered with slightly overlapping silvery scales; style shorter than the shorter stamens, reddish brown, glabrous.

CAPSULE:

HABITAT: described from plants cultivated at Kew.

RHODODENDRON MICROLEUCUM, *Hutchinson* in *Gard. Chron.*, xciii. (1933), 334.

Illustration—

Habit : small, much-branched shrublet ; branchlets densely leafy, densely covered with dark rusty-brown scales ; leaf-bud-scales early deciduous.

Leaves : narrowly oblanceolate, narrowed to the base, with a very minute mucronate tip, 1-1·3 cm. long, 4 mm. broad, bright green above but clothed with very thin uniformly brown scales, the scales not quite completely hiding the sap-green lower epidermis ; petiole short.

Inflorescence : terminal, 2-3-flowered ; flower-bud-scales subpersistent during flowering, densely covered with pale scales outside, closely ciliate ; stalks 3-4 mm. long, densely scaly.

Flowers : pure white.

Calyx : shortly 5-lobed, lobes ovate, densely covered with pale hyaline scales but not ciliate.

Corolla : tube very short and campanulate, glabrous outside, shortly pubescent inside the mouth ; lobes glabrous, with crinkly margins.

Stamens : 10, exserted ; filaments white, thinly pilose towards the base ; anthers chocolate-brown.

Pistil : ovary 5-celled, densely covered with pale hyaline scales ; style nearly as long as the longer stamens, lepidote in the lower third, pale green.

Capsule :

Habitat : originally described from a living plant growing in the rock garden at Exbury, Hampshire, 10th April 1933, from G. Forrest's seed.

RHODODENDRON MULIENSE, *Balf. f. & Forrest.*

Illustration—

Habit : small shrub 1½-2½ ft. high ; branchlets densely scaly ; leaf-bud-scales early deciduous.

Leaves : oblong elliptic, ½ in. long, ⅓ in. broad, densely scaly on both surfaces, the scales below more or less contiguous ; leaf-stalks scaly.

Inflorescence : terminal, about 5-6-flowered ; flower-bud-scales early deciduous ; flower-stalks scaly.

Flowers : *bright yellow.*

Calyx : well developed, ⅙ in. long, lobes elliptic, densely scaly outside and fringed with short hairs.

Corolla : scaly outside, about ⅔ in. long.

Stamens : 10, exserted, pubescent towards the base.

Ovary : scaly ; style *pubescent* towards the base.

Capsule : ⅛ in. long, scaly.

Habitat : South-Western Szechuan, Mu-li Mountains, 12,000-13,000 ft. ; openings in pine forests on rocky stony pasture.

RHODODENDRON NIGROPUNCTATUM, *Bureau & Franch.*

ILLUSTRATION—Hutchinson in *Bot. Mag.*, t. 8529 (1913).

HABIT : small shrub, intricately branched ; branchlets scaly ; leaf-bud-scales early deciduous.

LEAVES : narrowly elliptic, $\frac{1}{4}$ in. long, densely scaly on both surfaces, the scales below slightly overlapping and pale greenish-yellow ; leaf-stalks scaly.

INFLORESCENCE : terminal, 1-2-flowered ; flower-bud-scales subpersistent ; flower-stalks very short.

FLOWERS : pale purple.

CALYX : up to $1\frac{1}{2}$ in. long, scaly outside, fringed with hairs in the upper part.

COROLLA : openly funnel-shaped, $\frac{1}{3}$ in. long, not scaly outside.

STAMENS : 10, exserted, villous towards the base.

OVARY : scaly ; style longer than the stamens, glabrous.

CAPSULE :

HABITAT : Szechuan, 10,000-15,000 ft.

RHODODENDRON NITIDULUM, *Rehd. & Wils.*

ILLUSTRATION—

HABIT : shrub up to 4 ft. high ; branchlets short, scaly ; leaf-bud-scales early deciduous.

LEAVES : broadly elliptic, $\frac{1}{2}$ in. long, $\frac{1}{4}$ in. broad, densely scaly on both surfaces, the scales below slightly overlapping, uniform ; leaf-stalks $\frac{1}{12}$ in. long, scaly.

INFLORESCENCE : terminal, 1-2-flowered ; flower-bud-scales subpersistent ; flower-stalks very short, glabrous.

FLOWERS : violet-purple.

CALYX : well developed, $\frac{1}{8}$ in. long, densely scaly outside, not ciliate.

COROLLA : widely funnel-shaped, $\frac{1}{2}$ in. long, not scaly outside.

STAMENS : 8-10, exserted, pubescent towards the base.

OVARY : scaly ; style longer than the stamens, glabrous.

CAPSULE :

HABITAT : Western Szechuan, Mupin, 10,000-12,000 ft.

var. *nubigenum*, Rehd. & Wils., has a lower habit, smaller leaves, and usually coloured calyx ; it is found near Tachienlu, about 15,000 ft.

RHODODENDRON NIVALE, *Hook. f.*

Illustration—Hook. f. *Rhod. Sikkim Himal.*, t. 26 (1849).

Habit : low prostrate shrublet forming cushions ; branchlets densely scaly ; leaf-bud-scales early deciduous.

Leaves : elliptic, very small, less than $\frac{1}{4}$ in. long, very densely scaly on both surfaces, the scales overlapping ; leaf-stalks very short.

Inflorescence : terminal, 1-flowered ; flower-stalks very short, scaly.

Flowers : *bright magenta.*

Calyx : well developed, $\frac{1}{8}$ in. long, lobes oblong-elliptic, scaly outside and on the margin.

Corolla : open, with a very short tube, deeply lobed, about $\frac{1}{2}$ in. long, the lobes slightly scaly outside, the tube villous within.

Stamens : *10*, long-exserted, pubescent towards the base.

Ovary : scaly ; style curved, longer than the stamens, glabrous.

Capsule : ovoid, $\frac{1}{6}$ in. long, scaly.

Habitat : Sikkim and Southern Tibet, 15,000-18,000 ft.

RHODODENDRON ORTHOCLADUM, *Balf. f. & Forrest.*

ILLUSTRATION—

HABIT : small shrub up to 4 ft. high ; branchlets densely scaly ; leaf-bud-scales early deciduous.

LEAVES : oblanceolate, about $\frac{1}{2}$ in. long, densely scaly on both surfaces, the scales below contiguous or overlapping ; leaf-stalks scaly.

INFLORESCENCE : terminal, 1-3-flowered ; flower-stalks $1\frac{1}{2}$ in. long, densely scaly.

FLOWERS : mauve.

CALYX : very small with triangular lobes, densely scaly outside.

COROLLA : openly funnel-shaped, not scaly outside, nearly $\frac{1}{2}$ in. long.

STAMENS : 10, exserted, slightly pubescent towards the base.

OVARY : densely scaly ; style shorter than the stamens, glabrous.

CAPSULE : $\frac{1}{8}$ in. long, scaly.

HABITAT : Northern Yunnan, 11,000-12,000 ft., open places on limestone cliffs.

RHODODENDRON PALUDOSUM, *Hutch. & Ward, n. sp.*

ILLUSTRATION—

HABIT: an intricately branched shrublet; branchlets covered with blackish scales; leaf-bud-scales early deciduous.

LEAVES: elliptic, obtuse or rounded at the apex, $\frac{1}{3}$ in. long, closely covered with deeply impressed scales on the upper surface, densely scaly below, the scales contiguous, light brown with black ones scattered here and there; leaf-stalks 1 in. long.

INFLORESCENCE: terminal, 1-flowered; flower-stalks very short (almost subsessile flowers); flower-bud-scales early deciduous.

FLOWERS: bright violet.

CALYX: large for the flower, lobes ovate-oblong, loosely scaly outside, not ciliate.

COROLLA: shortly and openly tubular, not scaly outside, about $\frac{1}{3}$ in. long, thinly pilose inside the tube.

STAMENS: 8, far-exserted, pilose towards the base.

OVARY: 5-celled, scaly; style slightly longer than the stamens, minutely pubescent towards the base.

CAPSULE: not seen.

HABITAT: Tibet; Rong-chu (Tumbatse), in masses in open bogs, 12,000 ft., *Ward* 5792.

RHODODENDRON PARVIFOLIUM, *Adams.*

Illustration—Gartenfl., t. 904.

Habit : small shrublet up to 1½ ft. high, with rather few elongated branchlets with scattered leaves ; branchlets densely covered with flaky scales.

Leaves : oblong-lanceolate, obtusely mucronate, shortly acute at the base, about ¾ in. long and ⅓ in. broad, about equally scaly on both surfaces, the scales below adpressed and more or less contiguous showing the green surface between ; leaf-stalks about ¼ in. long, scaly.

Inflorescence : terminal, umbellate, about 5-flowered ; flower-stalks ⅙-¼ in. long, scaly.

Flowers : *pale rose-magenta,** slightly scented.

Calyx : fairly well developed, about $\frac{1}{12}$ in. long, 5-lobed, lobes rounded-ovate, *ciliate with a few slender white hairs*, densely scaly outside.

Corolla : nearly ⅔ in. long, quite glabrous both outside *and inside*, 5-lobed.

Stamens : *10*, exserted, about as long as the corolla, pubescent for a very short distance just above the base, filaments rose-coloured.

Ovary : 5-celled, scaly ; style slightly longer than the stamens, glabrous, rose.

Habitat : North-Eastern Asia : from Eastern Altai to Kamchatka and the Island of Sakhalin ; cold alpine marshes.

* There is also a white-flowered variety, var. *albiflorum*, Herd, from Mt. Munku-Sardyk, near Lake Baikal.

RHODODENDRON POLIFOLIUM, *Franch.*

ILLUSTRATION—

HABIT : small shrub, branchlets erect, clustered in tiers, loosely scaly ; leaf-bud-scales early deciduous.

LEAVES : oblong-oblanceolate, nearly $\frac{1}{2}$ in. long, densely scaly on both surfaces, scales below much overlapping, uniform, yellowish-brown ; leaf-stalks densely scaly.

INFLORESCENCE : axillary, 1-flowered ; flower-bud-scales persistent ; flower-stalks very short.

FLOWERS : mauve.

CALYX : very short, scaly outside.

COROLLA : widely funnel-shaped, not scaly outside, about $\frac{1}{3}$ in. long.

STAMENS : 10, exserted, pubescent towards the base.

OVARY : scaly ; style glabrous, longer than the stamens.

CAPSULE :

HABITAT : Western Szechuan, near Tachienlu.

RHODODENDRON POLYCLADUM, *Franch.*

ILLUSTRATION—

HABIT : small shrub up to 4 ft. high ; branchlets very short, densely scaly ; leaf-bud-scales early deciduous.

LEAVES : elliptic, $\frac{1}{2}$ in. long, $\frac{1}{4}$ in. broad, loosely scaly above, densely so below, the scales contiguous or overlapping ; leaf-stalks scaly.

INFLORESCENCE : terminal, 1-2-flowered ; flower-bud-scales early deciduous ; flower-stalks very short, scaly.

FLOWERS : purple.

CALYX : very short, densely scaly outside.

COROLLA : openly funnel-shaped, $\frac{1}{2}$ in. long, not scaly outside.

STAMENS : 10, long-exserted, pubescent towards the base.

OVARY : densely scaly ; style glabrous, a little longer than the stamens.

CAPSULE :

HABITAT : Szechuan, grasslands.

RHODODENDRON RAMOSISSIMUM, *Franch.*

(R. YARAGONGENSE, *Balf. f.*)

ILLUSTRATION—

HABIT : shrub up to 3 ft. high, intricately branched ; branchlets very short, scaly ; leaf-bud-scales early deciduous.

LEAVES : broadly elliptic, about $\frac{1}{4}$ in. long, densely scaly on both surfaces, scales overlapping below, uniform, rusty-red ; leaf-stalks scaly.

INFLORESCENCE : terminal, 1-2-flowered ; flower-bud-scales early deciduous ; flower-stalks very short, scaly.

FLOWERS : dark purple.

CALYX : very short, scaly outside.

COROLLA : openly funnel-shaped, not scaly outside, about $\frac{1}{3}$ in. long.

STAMENS : 10, exserted, pubescent towards the base.

OVARY : scaly ; style glabrous, shorter than the stamens.

CAPSULE : $\frac{1}{5}$ in. long, densely scaly, topped by the persistent style.

HABITAT : Western Szechuan, near Tachienlu, 11,000-13,000 ft., on moorlands.

RHODODENDRON RAVUM, *Balf. f. & W. W. Sm.*

(R. CHEILANTHUM, *Balf. f. & Forrest*; R. SCLEROCLADUM, *Balf. f. & Forrest.*)

ILLUSTRATION—

HABIT: small shrub up to 4 ft. high; branchlets densely scaly; leaf-bud-scales early deciduous.

LEAVES: obovate-oblanceolate, $\frac{3}{4}$ in. long, $\frac{1}{4}$-$\frac{1}{3}$ in. broad, densely scaly on both surfaces, the scales below slightly overlapping, uniform in size and colour; leaf-stalks $\frac{1}{8}$ in. long, scaly.

INFLORESCENCE: terminal, 4-5-flowered; flower-bud-scales subpersistent; flower-stalks about $\frac{1}{4}$ in. long, scaly.

FLOWERS: deep rose.

CALYX: well developed, $\frac{1}{6}$ in. long, lobes oblong or elliptic, scaly up the middle, densely fringed with long hairs.

COROLLA: narrowly funnel-shaped, $\frac{3}{4}$ in. long, lobes with a few scales outside.

STAMENS: 10, exserted, very slightly pubescent towards the base.

OVARY: scaly; style slender, longer than the stamens, *pubescent* towards the base.

CAPSULE:

HABITAT: Yunnan, north-east of the Yangtze bend, 10,000-11,000 ft., open scrub.

RHODODENDRON RUPICOLA,* *W. W. Sm.*

ILLUSTRATION—

HABIT : small shrub 1-2 ft. high ; branchlets short, densely scaly ; leaf-bud-scales early deciduous.

LEAVES : broadly elliptic, about $\frac{1}{2}$ in. long and $\frac{1}{3}$ in. broad, densely scaly on both surfaces, the scales below contiguous or slightly overlapping ; leaf-stalks scaly.

INFLORESCENCE : terminal, 3-5-flowered ; flower-bud-scales early deciduous ; flower-stalks very short, scaly.

FLOWERS : deep plum-crimson.

CALYX : well developed, $\frac{1}{12}$ in. long, lobes scaly up the middle, purplish, fringed with very short hairs.

COROLLA : widely funnel-shaped, $\frac{1}{2}$ in. long, scaly outside the lobes, shortly villous within.

STAMENS : 10, exserted, villous towards the base.

OVARY : densely scaly above and pubescent near the base ; style glabrous, longer than the stamens.

CAPSULE : $\frac{1}{4}$ in. long, scaly.

HABITAT : Yunnan, Chungtien Plateau, 13,000 ft., limestone cliffs.

* Probably the same as *R. achroanthum* but with more numerous stamens.

RHODODENDRON RUSSATUM, *Balf. f. & Forrest.*

(R. OSMERUM, *Balf. f. & Forrest* MSS.)

ILLUSTRATION—*Gard. Chron.*, 81 : p. 333 (1927).

HABIT : small shrub up to 4 ft. high ; branchlets densely scaly ; leaf-bud-scales early deciduous.

LEAVES : oblong-lanceolate, subacute, about 1 in. long and $\frac{1}{2}$ in. broad, densely scaly on both surfaces, the scales below contiguous or slightly overlapping, rusty-brown ; leaf-stalks $\frac{1}{4}$ in. long, scaly.

INFLORESCENCE : terminal, 4-5-flowered ; flower-stalks short, slightly scaly ; flower-bud-scales persistent during flowering.

FLOWERS : deep purple-blue, with a white throat.

CALYX : well developed, $\frac{1}{8}$-$\frac{1}{6}$ in. long, lobes broadly elliptic, glabrous outside, fringed with long weak hairs.

COROLLA : openly funnel-shaped, $\frac{1}{2}$-$\frac{3}{4}$ in. long, not scaly outside, pubescent within the throat.

STAMENS : 10, exserted, villous towards the base.

OVARY : densely scaly ; style a little longer than the stamens, pubescent in the lower part.

CAPSULE : $\frac{1}{6}$ in. long, scaly.

HABITAT : North-Western Yunnan, Kari Pass, 12,000 ft., open moist stony pasture.

RHODODENDRON SCINTILLANS, *Balf. f. & W. W. Sm.*

Illustration—*Gard. Chron.*, 75 : p. 78 (1924).

Habit : small shrub with erect branches : branchlets twiggy, densely scaly ; leaf-bud-scales early deciduous.

Leaves : oblanceolate, about $\frac{1}{2}$ in. long and $\frac{1}{6}$ in. broad, densely scaly on both surfaces, the scales below contiguous or slightly overlapping ; leaf-stalks scaly.

Inflorescence : terminal, about 3-flowered ; flower-bud-scales subpersistent during flowering ; flower-stalks very short, densely scaly.

Flowers : lavender-blue.

Calyx : very short, scaly outside.

Corolla : openly funnel-shaped, $\frac{1}{2}$ in. long, not scaly outside.

Stamens : 10, exserted, villous towards the base.

Ovary : scaly ; style longer than the stamens, glabrous.

Capsule : $\frac{1}{6}$ in. long, scaly.

Habitat : Yunnan, Lichiang Range, 11,000-14,000 ft., open pastures and on cliffs.

RHODODENDRON SETOSUM, *Wall.* Flowers bright purple-pink.

A. Leaves, above and below. B. Stamen. C. Calyx and pistil. D. Cross-section of ovary. (Adapted from *Hooker.*)

RHODODENDRON SETOSUM, *D. Don.*

Illustrations—Hook. f. *Rhod. Sikkim Himal.*, t. 20 (1849) ; *Bot. Mag.*, t. 8523 (1914).

Habit : small shrub ; branchlets densely setose ; leaf-bud-scales early deciduous.

Leaves : oblong-elliptic, $\frac{1}{3}$-$\frac{1}{2}$ in. long, about $\frac{1}{4}$ in. broad, glandular-scaly above, densely setose and scaly below, the scales about their own diameter apart, the bristles soon falling off ; leaf-stalks bristly.

Inflorescence : terminal, about 3-flowered ; flower-bud-scales early deciduous ; flower-stalks about $\frac{1}{8}$ in. long, scaly.

Flowers : *bright purple-pink.*

Calyx : well developed, red, about $\frac{1}{4}$ in. long, lobes broadly elliptic, sparingly scaly outside and on the margin.

Corolla : openly funnel-shaped, deeply divided, up to 1 in. long, not scaly outside.

Stamens : *10*, exserted, pubescent towards the base.

Ovary : densely scaly ; style reddish, glabrous.

Capsule : $\frac{1}{4}$ in. long, scaly, enclosed by the persistent calyx.

Habitat : Sikkim Himalaya and Southern Tibet, 11,000-16,000 ft.

RHODODENDRON SPILANTHUM, *Hutchinson, n. sp.*

Illustration—

Habit : a small shrub with ascending branches covered with grey splitting bark ; leafy branchlets numerous, twiggy, covered with light-brown flaky scales ; leaf-bud-scales early deciduous.

Leaves : elliptic (very similar to those of *R. hippophaeoides*), shortly narrowed at the base, rounded and finely mucronate at the apex, scarcely $\frac{1}{2}$ in. long, $\frac{1}{4}$ in. broad, densely scaly on both surfaces, green above, with the scales impressed and contiguous, yellowish below with the scales densely overlapping, without visible nerves ; leaf-stalks rather long for the size of the blade.

Inflorescence : terminal, 1-flowered ; flower-stalk almost nothing, glabrous ; flower-bud-scales persistent during flowering, not scaly outside, slightly fringed with hairs.

Flowers : apparently mauve.

Calyx : deeply 5-lobed, lobes about $\frac{1}{12}$ in. long or less, glabrous outside, fringed with a few scales.

Corolla : widely funnel-shaped ; 5-lobed, tube and lobes not scaly outside, throat minutely pubescent.

Stamens : 10, much shorter than the corolla, pubescent towards the base.

Ovary : 5-celled, densely scaly ; style a little shorter than the shortest stamen, glabrous.

Capsule : not seen.

Habitat : South-Western Szechuan ; Muli or Mili Kingdom, June 1922, *Rock* 6460 (type).

This seems to be a very distinct species of series *Lapponicum*, with foliage very like that of *R. hippophaeoides*. The name refers to the spot-like flowers which are solitary and subsessile within the persistent flower-bud-scales. The affinity is with *R. ramosissimum*, which has early-deciduous flower-bud-scales and scaly flower-stalks. J. H.

RHODODENDRON STICTOPHYLLUM, *Balf. f.*

(R. BATANGENSE, *Balf. f.*)

ILLUSTRATION—

HABIT : small shrublet, intricately branched ; branchlets scaly ; leaf-bud-scales early deciduous.

LEAVES : narrowly elliptic, very small, about $\frac{1}{4}$ in. long, densely scaly on both surfaces, the scales overlapping below, mostly rusty-red ; leaf-stalks scaly.

INFLORESCENCE : terminal, 1-flowered ; flower-stalks minute, scaly.

FLOWERS : mauve to rose.

CALYX : minute, scaly outside.

COROLLA : openly funnel-shaped, $\frac{1}{3}$ in. long, not scaly outside, or only slightly so.

STAMENS : 10, exserted, glabrous.

OVARY : densely scaly ; style as long as the stamens, glabrous.

CAPSULE :

HABITAT : Western Szechuan ; Batang, Yaragong.

RHODODENDRON TAPETIFORME, *Balf. f. & Ward.*

Illustration—

Habit : small shrublet forming a carpet ; branchlets scaly ; leaf-bud-scales early deciduous.

Leaves : broadly elliptic, nearly $\frac{1}{2}$ in. long, densely scaly on both surfaces, the scales below overlapping, warm reddish-brown ; leaf-stalks scaly.

Inflorescence : terminal, 2-3-flowered ; flower-bud-scales early deciduous ; flower-stalks about $\frac{1}{12}$ in. long, *softly puberulous* and scaly.

Flowers : pink.

Calyx : very short, fringed with short hairs.

Corolla : openly funnel-shaped, $\frac{1}{2}$ in. long, not scaly outside.

Stamens : 10, exserted, villous towards the base.

Ovary : scaly ; style glabrous, as long as the stamens.

Capsule :

Habitat : Tibet-Yunnan frontier, Ka-gwr-pw, 15,000 ft.

RHODODENDRON TELMATEIUM, *Balf. f. & W. W. Sm.*

(R. VICARIUM, *Balf. f.*)

ILLUSTRATION—

HABIT : small shrub up to 3 ft. high ; branchlets densely scaly ; leaf-bud-scales early deciduous.

LEAVES : oblanceolate, about $\frac{1}{3}$ in. long, hardly $\frac{1}{6}$ in. broad, densely scaly on both surfaces, the scales below pale brown and overlapping, with larger darker ones here and there ; leaf-stalks scaly.

INFLORESCENCE : terminal, 1-flowered ; flower-stalks $\frac{1}{8}$ in. long, scaly.

FLOWERS : deep rosy-purple with white corolla throat.

CALYX : $\frac{1}{16}$ in. long, densely scaly outside, not ciliate on the margin.

COROLLA : openly funnel-shaped, $\frac{1}{2}$ in long, scaly outside the lobes.

STAMENS : usually 10, exserted, pubescent.

OVARY : scaly ; style glabrous, longer than the stamens.

CAPSULE :

HABITAT : Yunnan, Chungtien Plateau, 10,000-12,000 ft., open situations.

RHODODENDRON THYMIFOLIUM, *Maxim.*

Illustration—

Habit : small erect shrub ; branchlets densely scaly ; leaf-bud-scales early deciduous.

Leaves : narrowly oblanceolate, about $\frac{1}{3}$ in. long, densely scaly on both surfaces, the scales below uniform, much overlapping, yellowish-brown ; leaf-stalks scaly.

Inflorescence : terminal, 1-flowered ; flower-bud-scales persistent ; flower-stalks absent.

Flowers : mauve.

Calyx : very short, scaly outside.

Corolla : widely funnel-shaped, $\frac{1}{3}$ in. long, not scaly outside.

Stamens : 10, exserted, pubescent towards the base.

Ovary : densely scaly ; style shorter than the stamens, glabrous.

Capsule :

Habitat : Kansu.

RHODODENDRON VERRUCULOSUM, *Rehd. & Wils.*

ILLUSTRATION—

HABIT : small shrub up to 3 ft. high ; branchlets very short, densely scaly ; leaf-bud-scales early deciduous.

LEAVES : broadly elliptic, $\frac{1}{2}$ in. long, $\frac{1}{4}$ in. broad, scaly on both surfaces, the scales above thick and fleshy, those below thin and from half to their own diameter apart ; leaf-stalks $\frac{1}{8}$ in. long, scaly.

INFLORESCENCE : terminal, 1-flowered ; flower-bud-scales subpersistent ; flower-stalks very short, scaly.

FLOWERS : purple.

CALYX : well developed, $\frac{1}{12}$ in. long, lobes as broad as long, scaly outside, fringed with short hairs.

COROLLA : openly funnel-shaped, about $\frac{1}{2}$ in. long, scaly only outside the lobes.

STAMENS : 7-8, exserted, villous in the lower part.

OVARY : scaly ; style longer than the stamens, glabrous.

CAPSULE :

HABITAT : Western Szechuan, about 1000 ft., sunny places amongst rocks.

RHODODENDRON VIOLACEUM, *Rehd. & Wils.*

Illustration—

Habit : small shrub up to 4 ft. high ; branchlets very short, scaly ; leaf-bud-scales early deciduous.

Leaves : narrowly oblong-elliptic, $\frac{1}{3}$ in. long, densely scaly on both surfaces, the scales below overlapping ; leaf-stalks scaly.

Inflorescence : terminal, 1-3-flowered, flowers subsessile ; flower-bud-scales early deciduous.

Flowers : violet-purple.

Calyx : very small, scaly outside.

Corolla : openly funnel-shaped, nearly $\frac{1}{2}$ in. long, not scaly outside.

Stamens : 10, exserted, villous towards the base.

Ovary : scaly ; style longer than the stamens, glabrous.

Capsule : $\frac{1}{6}$ in. long, scaly.

Habitat : Western Szechuan, 12,000-13,500 ft., moorlands.

RHODODENDRON WEBSTERIANUM, *Rehd. & Wils.*

ILLUSTRATION—

HABIT : small shrub up to 3 ft. high ; branchlets densely scaly ; leaf-bud-scales early deciduous.

LEAVES : narrowly elliptic, about $\frac{1}{3}$ in. long, densely scaly on both surfaces, the scales below densely packed and yellowish-grey ; leaf-stalks scaly.

INFLORESCENCE : terminal, usually 1-flowered ; flower-bud-scales subpersistent ; flower-stalks $\frac{1}{8}$ in. long, scaly.

FLOWERS : rosy-purple.

CALYX : well developed, $\frac{1}{6}$ in. long, lobes purplish, scaly down the middle and at the base, very shortly ciliate.

COROLLA : openly funnel-shaped, $\frac{3}{4}$ in. long, not scaly outside.

STAMENS : 10, exserted, villous towards the base.

OVARY : scaly ; style a little longer than the stamens, slightly scaly towards the base.

CAPSULE : $\frac{1}{6}$ in. long, scaly, surrounded by the persistent calyx.

HABITAT : Western Szechuan, Tachienlu, 10,000-14,000 ft., on moorlands.

RHODODENDRON YUNGNINGENSE, *Balf. f.*

ILLUSTRATION—

HABIT : intricately branched shrublet 1-1½ ft. high ; branchlets very short, densely scaly ; leaf-bud-scales early deciduous.

LEAVES : oblong-oblanceolate, about ⅓ in. long, densely scaly on both surfaces, the scales below uniform, rusty-brown, slightly overlapping ; leaf-stalks scaly.

INFLORESCENCE : terminal, 1-2-flowered ; flower-bud-scales early deciduous ; flower-stalks $\frac{1}{12}$ in. long, scaly.

FLOWERS : deep purple.

CALYX : very short, with broad ovate lobes, scarcely scaly outside, fringed with very short hairs.

COROLLA : openly funnel-shaped, ⅓ in. long, not scaly outside.

STAMENS : 10, exserted, villous towards the base.

OVARY : scaly ; style glabrous, longer than the stamens.

HABITAT : South-Western Szechuan, mountains east of Yungning, 13,000-14,000 ft.

LEPIDOTUM SERIES

General Characters :—Small shrubs or shrublets with short branchlets. Leaves evergreen, usually completely covered below with overlapping scales. Inflorescence terminal, usually few-flowered. Flowers purple, reddish, yellow or pink. Calyx well developed, scaly outside. Corolla shortly and openly tubular, 5-lobed, scaly outside, rarely pubescent. Stamens 8 or 10, exserted, pubescent. Ovary 5-celled, scaly ; style short and thick, often bent, glabrous. Capsule very short.

Distribution :—Himalayas and Southern Tibet, one species extending into Yunnan.

A small series of closely allied species, except *R. pumilum*, which diverges considerably from the others. The nearest affinity is with the *Glaucum* series, whilst there is a tendency towards the *Lapponicum* group.

J. H.

KEY TO THE SPECIES

A. Leaves completely covered below with overlapping scales ; flowers not pink :

B. Flowers several in a terminal truss, usually 5-9 or rarely up to 14 ; flowers reddish-purple :

Some stamens pubescent nearly to the top . **Baileyi.**

None of the stamens not pubescent beyond the middle **thyodocum.**

B. Flowers few (2-4) in a truss or solitary :

C. Leaves narrowly oblanceolate ; flowers pale yellow or greenish-yellow . . . . . **lepidotum.**

C. Leaves broadly obovate or obovate-elliptic :

D. Leaves fairly large, $\frac{3}{4}$-2 in. long, $\frac{1}{3}$-1 in. broad . **obovatum.**

D. Leaves small, up to $\frac{1}{2}$ in. long and $\frac{1}{4}$ in. broad **elaeagnoides.**

A. Leaves not completely covered below with scales, the latter about twice their own diameter apart or more :

B. Leaves obovate-elliptic ; flowers pink ; style shorter than corolla . . . . . **pumilum.**

B. Leaves oblanceolate ; flowers purple ; style longer than corolla ; scales on leaves very few . . **imperator.**

B. Leaves oblong-obovate ; flowers purple ; style longer than the stamens ; scales on leaves 3-4 times their own diameter apart . . . . . **uniflorum.**

RHODODENDRON BAILEYI, *Balf. f.*

Illustration—Stapf in *Bot. Mag.*, t. 8942 (1922).

Habit : Small shrub up to 3 ft. high ; young parts very densely scaly.

Leaves : *obovate* or obovate-oblong, narrowed to the base, rounded or subemarginate at the apex, 1-1¾ in. long, ½-1 in. broad, closely scaly above, very densely covered with overlapping cinnamon scales below ; leaf-stalks quite ¼ in. long.

Inflorescence : terminal, racemose, *several-flowered* (5-9- or rarely up to 14-flowered) ; axis *softly pubescent* ; flower-stalks ¾-1 in. long, loosely scaly.

Flowers : reddish-purple, with darker spots on the upper 3 lobes of the corolla.

Calyx : deeply 5-lobed, lobes often unequal, up to ⅙ in. long, densely scaly outside, reddish, sometimes *fringed with long weak hairs*.

Corolla : about ½ in. long, tube short and broad, 5-lobed, the tube and lobes scaly outside.

Stamens : 10, variously pubescent according to position, some only towards the base, others *nearly to the top*.

Ovary : 5-celled, densely scaly ; style curved downwards, stout, red, glabrous.

Capsule : ¼ in. long, scaly.

Habitat : Southern Tibet ; Upper Nyanyang Valley, 9000-9500 ft.

RHODODENDRON ELAEAGNOIDES, *Hook. f.*

(R. SINOLEPIDOTUM, *Balf. f.* ; R. CREMNASTES, *Balf. f. & Farrer.*)

ILLUSTRATION—Hook. f. *Sikkim Rhod.*, t. 23 B (1849).

HABIT : dwarf shrublet *up to 9 in. high* ; branchlets numerous, twiggy, very rough with wart-like protuberances.

LEAVES : *broadly obovate-elliptic*, up to about $\frac{1}{2}$ in. long and $\frac{1}{4}$ in. broad, very densely covered on both surfaces with overlapping flake-like scales ; leaf-stalks short.

INFLORESCENCE : terminal, *1-flowered* ; flower-stalks about $\frac{3}{4}$ in. long, loosely covered with flaky scales.

FLOWERS : solitary, bright yellow or dull reddish-purple, nodding.

CALYX : spreading, 5-lobed, reddish, the lobes broad and loosely scaly outside.

COROLLA : 1-1$\frac{1}{4}$ in. diameter, shortly and broadly tubular, 5-lobed, densely glandular outside.

STAMENS : 8, as long as the tube ; filaments *pubescent near the base.*

OVARY : 5-celled, scaly ; style short and curved, glabrous.

CAPSULE : $\frac{1}{4}$ in. long, densely scaly, surrounded by the persistent calyx-lobes.

HABITAT : Sikkim Himalaya, open rocky places, 12,000-16,000 ft. ; North-Eastern Upper Burma, Chimili, 11,000 ft. ; Yunnan, about 10,000 ft. in the Lichiang Range (27° 25′ N.).

RHODODENDRON IMPERATOR, *Hutch. & Ward, n. sp.*

Illustration—

Habit: dwarf shrublet forming a flat carpet; branchlets sparingly scaly; leaf-bud-scales early deciduous.

Leaves: oblanceolate, acute to rounded and mucronate at the apex, $\frac{1}{2}$-1 in. long, $\frac{1}{4}$-$\frac{1}{3}$ in. broad, glabrous above, glaucous-green below, with very few and small blackish scales; leaf-stalks very short.

Inflorescence: terminal, 1-flowered; flower-bud-scales deciduous; flower-stalks crimson, nearly 1 in. long, sparingly scaly.

Flowers: bright purple, not marked.

Calyx: shortly lobed, scaly outside.

Corolla: narrowly funnel-shaped, over 1 in. long, slightly pubescent all over the outside.

Stamens: 10, included, about half as long as the corolla, pubescent just above the base.

Ovary: scaly; style slightly longer than the corolla, glabrous, crimson.

Capsule: $\frac{1}{2}$ in. long, covered with very small scales.

Habitat: Burma; Seinghku Wang, 10,000-11,000 ft., on bare ledges of granite cliffs, fully exposed, *Ward* 6884 (type).

RHODODENDRON LEPIDOTUM, *Wall.* Flowers pale yellow or greenish yellow, pink or purple.

A. Lower surface of leaf. B. Calyx and pistil. C. Stamen. D. Fruit.

RHODODENDRON LEPIDOTUM, *Wall.*

(R. SALIGNUM, *Hook. f.*)

ILLUSTRATION—Hook. f. *Sikkim Rhod.*, t. 23 (left-hand figure only) (1849).

HABIT : small shrub up to 3-4 ft. high ; branchlets thinly warty, the older bark smooth and grey.

LEAVES : *narrowly oblanceolate*, 1-1½ in. long, densely covered with contiguous more or less fleshy scales on the lower surface ; leaf-stalks $\frac{1}{12}$ in. long.

INFLORESCENCE : terminal, usually 3-4-flowered ; flower-stalks slender, ¾-1 in. long, rather densely glandular.

FLOWERS : *pale yellow or greenish-yellow, pink or purple.*

CALYX : green, deeply 5-lobed, lobes scaly outside.

COROLLA : about 1 in. diameter, shortly and broadly tubular, 5-lobed, very *densely scaly-glandular outside.*

STAMENS : 8, exserted ; filaments pubescent in the *lower half.*

OVARY : 5-celled, scaly ; style short and thick, glabrous.

CAPSULE : ⅓ in. long, densely scaly, girt by the appressed persistent calyx-lobes.

HABITAT : Himalayas, from Kashmir to Bhutan ; Southern Tibet, 7000-15,000 ft.

RHODODENDRON LUDLOWII, *Cowan in Notes R.B.G. Edin.*, vol. 19 (1937), 243.

Illustration—

Habit : a shrub of about 1 ft. ; branchlets slender, scaly.

Leaves : leathery, lamina obovate, 1·4 cm. long, 1 cm. broad ; apex rounded with a sharp abrupt point ; base obtuse ; upper surface dark green, shining, sparsely scaly ; under surface covered with scales 2 or more times their own diameter apart ; midrib conspicuous ; petiole flattened, 1-2 mm. long, scaly.

Inflorescence : 1-2 terminal or subterminal flowers.

Pedicels : 2·5 cm. long, scaly.

Calyx : green, leafy, divided to the middle, about 5 mm. long ; lobes 5, rounded, densely scaly.

Corolla : broadly tubular, 1·5-2·5 cm. long, primrose-yellow spotted yellowish-brown inside tube, softly silky pubescent and scaly on outside ; tube puberulous at base ; lobes 1-1·5 cm. long and broad.

Stamens : 10, shorter than corolla ; filaments hairy near the base.

Pistil : about 2 cm. long ; ovary small, subglobose, about 3 mm. long, densely lepidote ; style longer than the stamens.

Capsule :

Habitat : Southern Tibet, Lo La. On open rocky hillsides at 13,500 ft.

A species closely allied to *R. pumilum* but taller, easily distinguished by its yellowish flowers and style as long as or longer than the corolla.

RHODODENDRON OBOVATUM, *Hook. f.*

Illustration—Hook. f. *Sikkim Rhod.*, t. 23 (top right-hand figure only) (1849).

Habit : small shrub 3-4 ft. high ; branchlets very short, *glandular-warted.*

Leaves : *obovate*, prominently obtusely mucronate, $\frac{3}{4}$-2 in. long, $\frac{1}{3}$-1 in. broad, densely scaly on both surfaces, the scales below much overlapping ; leaf-stalks $\frac{1}{4}$ in. long.

Inflorescence : terminal, *1-4-flowered* ; flower-stalks $\frac{1}{3}$-$\frac{1}{2}$ in. long, densely scaly.

Flowers : nodding, *purple*, with carmine spots.

Calyx : green, deeply 5-lobed, lobes slightly scaly outside, $\frac{1}{8}$ in. long.

Corolla : about $\frac{3}{4}$ in. diameter, shortly and broadly tubular, 5-lobed, tube and middle of the lobes densely scaly outside.

Stamens : 10, shortly exserted, *pubescent in the lower part.*

Ovary : densely scaly, 5-celled ; style short and bent, glabrous.

Capsule : $\frac{1}{4}$ in. long, densely glandular-scaly.

Habitat : Sikkim Himalaya, 9000-11,000 ft.

RHODODENDRON PUMILUM, *Hook. f.*

Illustration—Hook. f. *Rhod. Sikkim Himal.*, t. 14 (1849).

Habit : small shrublet with semi-prostrate branchlets, the latter loosely scaly.

Leaves : obovate-elliptic, mucronate, $\frac{1}{3}$-$\frac{3}{4}$ in. long, $\frac{1}{6}$-$\frac{1}{3}$ in. broad, glabrous above, loosely scaly below, the scales 2 or more times their own diameter apart, often glaucous ; leaf-stalks $\frac{1}{12}$ in. long.

Inflorescence : 1-3-flowered ; flower-stalks 1 in. long, loosely scaly.

Flowers : almost pure pink.

Calyx : deeply 5-lobed, lobes oblong-elliptic, up to $\frac{1}{8}$ in. long, purplish-red, loosely scaly outside.

Corolla : widely tubular, $\frac{1}{2}$-$\frac{3}{4}$ in. long, 5-lobed, loosely pubescent all over the outside and sometimes slightly scaly.

Stamens : 10, slightly *pubescent near the base.*

Ovary : 5-celled, densely scaly, abruptly contracted into the short thick glabrous style.

Capsule : nearly $\frac{1}{2}$ in. long, scaly, the valves slightly keeled ; stalk up to $2\frac{1}{2}$ in. long.

Habitat : Sikkim Himalaya, alpine slopes about 11,000-14,000 ft. ; Southern Tibet and the Burma-Yunnan border, 10,000-13,000 ft.

RHODODENDRON THYODOCUM, *Balf. f. & Cooper.*

Illustration—

Habit : small shrub up to 5 ft. high ; branchlets scaly.

Leaves : elliptic or obovate, obtuse, 1-2 in. long, $\frac{1}{3}$-$\frac{3}{4}$ in. broad, densely clothed above with peltate scales, tawny beneath with overlapping scales ; leaf-stalks $\frac{2}{3}$ in. long, densely scaly.

Inflorescence : racemose, 6-8-flowered ; flower-stalks up to $1\frac{1}{4}$ in. long, at length sparsely scaly.

Flowers : reddish-purple, spotted on the back.

Calyx : shortly lobed, scaly outside.

Corolla : $\frac{2}{3}$ in. long, densely scaly outside.

Stamens : 10, exserted, the *dorsal filaments pubescent nearly to the middle,* the others less so.

Ovary : 5-celled, densely scaly ; style thick, short, curved, glabrous.

Capsule : $\frac{1}{4}$ in. long, scaly.

Habitat : Bhutan.

RHODODENDRON UNIFLORUM, *Hutch. & Ward, n. sp.*

Illustration—

Habit : dwarf shrublet with subprocumbent branches ; young branchlets slightly scaly ; leaf-bud-scales early deciduous.

Leaves : clustered, oblong-obovate, rounded to a mucronate apex, $\frac{1}{2}$-$\frac{3}{4}$ in. long, $\frac{1}{4}$-$\frac{1}{2}$ in. broad, glaucous below, scales about 3-4 times their own diameter apart ; leaf-stalks very short.

Inflorescence : terminal, 1-flowered ; flower-bud-scales early deciduous ; flower-stalks about $\frac{1}{2}$ in. long covered with very small scales.

Flowers : purple.

Calyx : small, with rounded lobes scaly on the outside.

Corolla : broadly funnel-shaped, about 1 in. long, shortly lobed, softly pubescent and with a few scattered scales outside.

Stamens : 10, included, shortly pubescent just above the base.

Ovary : scaly ; style glabrous, slightly longer than the stamens.

Capsule : $\frac{1}{4}$ in. long, scaly.

Habitat : Southern Tibet ; Doshong La, 11,000-12,000 ft., on steep grassy slopes, *Ward* 5876 (type).

MADDENII SERIES

General Characters:—Medium-sized to large shrubs, often epiphytic. Leaves evergreen, more or less *densely scaly below*. Flowers fairly large to very large, usually several in a terminal, more or less umbellate inflorescence. Calyx small to large, often fringed with hairs. Corolla more or less funnel-shaped or narrowly campanulate, *often waxy*, mostly *pubescent* or *scaly outside*; lobes 5. Stamens 10-25, the filaments usually pubescent. Ovary 5-12-celled, *often 6-celled*, scaly; style nearly always *scaly* on a part of its length. Capsule short, rarely over $1\frac{1}{4}$ in. long.

Distribution:—Mainly concentrated from the Sikkim Himalaya to Western Yunnan and Burma; 2 species in Kweichow; absent from Szechuan and the remaining provinces of China.

A fairly natural and prolific group, attaining its maximum development in the Sikkim-Assam-Burma region. Although most of the species require the shelter of a greenhouse, a few occur at very high altitudes in Yunnan, and are perfectly hardy except for late spring frosts. *R. supranubium* occurs as high as 12,000 ft. on the eastern flank of the Tali Range.

In this group the large and difficult *Triflorum* series has probably found its origin.

J. H.

MADDENII SERIES

KEY TO THE SUBSERIES

A. Stamens 15-25; calyx usually fairly well-developed but rarely large; ovary cells 10-12; leaf-stalks usually with a V-shaped groove on the upper side . . . **Maddenii.**

A. Stamens 10 (very rarely up to 13); calyx various, obsolete to very large; ovary cells 5-7:

B. Calyx large and more or less leafy, with broadish lobes $\frac{1}{3}$ in. long or more; leaf-stalks convex and not grooved on the upper side (except *R. megacalyx*) . . . **Megacalyx.**

B. Calyx usually poorly developed and often ciliate; leaf-stalks with a V-shaped groove on the upper side . **Ciliicalyx.**

MADDENII SERIES

KEY TO THE SPECIES

Subseries **Maddenii**

A. Filaments glabrous :

B. Scales on the lower surface of the leaves contiguous or nearly so, never more than their own diameter apart ; flowers white, with a faint flush of rose outside in bud ; capsule 1 in. long, thick :

C. Stamens 20 ; calyx 5-lobed, lobes unequal, about $\frac{1}{6}$ in. long or up to $\frac{2}{3}$ in. long . . . . . **Maddenii.**

C. Stamens 15 ; calyx an undulate-rim . . **odoriferum.**

B. Scales on the lower surface of the leaves from 2-3 times their own diameter apart ; corolla narrowly tubular . **calophyllum.**

A. Filaments hairy in their lower part :

B. Corolla-tube about $\frac{3}{4}$ in. long ; anthers at most $\frac{1}{6}$ in. long ; stamens 20 ; flowers 2-3 together, pink **brachysiphon.**

B. Corolla-tube over $1\frac{1}{4}$ in. long ; anthers over $\frac{1}{5}$ in. long :

C. Stamens 25 ; leaves rather small, oblong-lanceolate, obtuse and rounded at both ends ; posterior calyx-lobe the longest . . . . . **polyandrum.**

C. Stamens 15-21 :

D. Anthers up to $\frac{1}{4}$ in. long :

E. Scales of the flower-buds not pubescent ; flower-stalks $\frac{1}{3}$ in. long ; ovary 12-celled . . . **manipurense.**

E. Scales of the flower-buds silky pubescent towards the top ; flower-stalks $\frac{2}{3}$ in. long ; ovary 10-celled **crassum.**

D. Anthers $\frac{1}{2}$ in. long ; leaves large, 6 in. long or more, oblong-elliptic, with 18-20 pairs of lateral nerves ; leaf-stalks 1-$1\frac{1}{2}$ in. long . . . . . **excellens.**

Subseries **Megacalyx**

A. Flower-stalks and calyx not scaly ; calyx divided to about the middle, with very broad lobes ; capsule very short ($\frac{3}{4}$ in.), scarcely longer than the persistent calyx-lobes ; style scaly only near the base . . . **megacalyx.**

A. Flower-stalks and usually the lower part of the calyx scaly :
  B. Corolla dotted with scales more or less all over the outside ; Chinese species :
    C. Calyx-lobes rather broadly ovate, veiny, scaly but not pubescent outside, about $\frac{1}{2}$ in. long ; leaves with 8-10 pairs of lateral nerves ; capsule $1\frac{3}{4}$ in. long, with rounded not keeled valves . . . . . **liliiflorum.**
    C. Calyx-lobes oblong, both scaly and softly pubescent outside, $\frac{3}{4}$ in. long ; leaves with about 15 pairs of very prominently looped and branched lateral nerves, almost bullate ; corolla up to $5\frac{1}{2}$ in. long ; capsule $2\frac{1}{2}$ in. long, rather densely covered with small fleshy glands, the valves keeled . . . . . **sinonuttallii.**
  B. Corolla not scaly outside or only on the lower part of the tube or at the base :
    C. Calyx-lobes not fringed with hairs (or with only very few hairs here and there) :
      D. Flower-stalks softly hairy as well as scaly :
        E. Corolla cream, with broad red lines outside down the middle of the lobes and down the tube ; leaves slightly narrowed to the base . . . **rhabdotum.**
        E. Corolla white, sometimes tinged with rose outside ; leaves conspicuously narrowed to the base ; valves of capsule distinctly keeled . . . . **Dalhousiae.**
      D. Flower-stalks glabrous except for the scales :
        E. Leaves narrowly oblong, with rather faint lateral nerves below ; corolla 3 in. long ; capsule straight, 2 in. long, covered with small fleshy glands, valves keeled **Taggianum.**
        E. Leaves obovate, with very prominent looped and branched lateral nerves below ; corolla 4 in. long or more ; capsule at most $1\frac{1}{2}$ in. long, valves slightly keeled **Nuttallii.**
    C. Calyx-lobes densely fringed with hairs ; corolla about 3 in. long ; flower-stalks scaly but not hairy ; capsule 2 in. long, the valves finely scaly, not keeled **Lindleyi.**

Subseries **Ciliicalyx**

A. Style quite smooth its full length, neither hairy nor scaly :
  B. Calyx-lobes broad, $\frac{1}{3}$ in. long ; corolla not scaly outside ; leaves and branchlets bristly hairy . . **ciliatum.**
  B. Calyx-lobes $\frac{1}{2}$ in. long ; corolla scaly and softly pubescent outside ; leaves and branchlets not bristly (except when young) ; Thibetan species . . . **Scopulorum.**
A. Style scaly at the base or well above the base :

B. Style scaly only at the base ; calyx-lobes large, $\frac{1}{3}$ in. long, densely fringed with hairs, scaly outside ; corolla densely scaly outside, yellow ; leaves small, bristly, with long stiff hairs ; Western Yunnan species . . **Valentinianum.**

B. Style scaly mostly well above the base ; calyx-lobes usually rather small :

C. Corolla-*tube* not scaly outside or only slightly so at the base of the lobes :

D. Some of the calyx-lobes connate to above the middle, nearly $\frac{1}{3}$ in. long ; leaves oblanceolate or oblong-oblanceolate, broader above the middle ; South-Western Burma . . . . . **Cuffeanum.**

D. All the calyx-lobes more or less equally separated, never more than $\frac{1}{4}$ in. long ; calyx sometimes saucer-shaped and undulate :

E. Calyx-lobes with numerous long bristly hairs on the margin ; axillary leaf-buds very densely fringed with soft white hairs ; scales on lower surface of leaves more than their own diameter apart . **ciliicalyx.**

E. Calyx-lobes without bristles on the margins or only occasionally with 1-3 bristles ; leaf-scales about their diameter or less than that apart :

F. Leaves more or less elliptic, equally pointed at both ends, widest at the middle ; scales very unequal on the lower surface, less than their own diameter apart **pseudociliicalyx.**

F. Leaves obovate-oblanceolate, long-cuneate at the base ; scales on lower surface of leaves about their own diameter apart . . . . **missionarum.**

F. Leaves more or less elliptic, rounded at each end ; scales on lower surface rather unequal and less than their own diameter apart . . . . . **Lyi.**

C. Corolla-tube more or less scaly all over the outside or down one side :

D. Flowers flesh-coloured or white or flushed with pink, sometimes with a yellow spot within the base (but never all yellow or greenish yellow) :

E. Leaves linear, acute, usually less than $\frac{2}{3}$ in. broad, the scales on the lower surface about their own diameter apart ; Assam species . . . **iteophyllum.**

E. Leaves oblong-oblanceolate to obovate, elliptic or ovate, always more than $\frac{3}{4}$ in. broad :

F. Scales on the lower surface of the leaves touching each other or nearly so below, never as much as their own diameter apart :

G. Leaves oblong-elliptic or ovate-elliptic, widest at or below the middle, more or less rounded at the base :

H. Calyx-lobes densely fringed with long weak hairs; flowers white, rosy outside; leaves acutely triangular acuminate . . . . **roseatum.**

H. Calyx-lobes with very few hairs on the margin; flowers white, with an orange mark inside the lower corolla-lobes; leaves rather abruptly and subacutely acuminate . . . **dendricola.**

G. Leaves obovate to oblanceolate, widest above the middle, more or less narrowed to the base; calyx-lobes usually rather densely fringed with bristly hairs:

H. Leaves oblanceolate to narrowly obovate, long-tapered to the base, strongly reticulate above; calyx very small and plate-like, scarcely lobed, densely scaly outside and closely fringed with weak hairs **rufosquamosum.**

H. Leaves obovate, shortly narrowed to the base:

I. Leaves rounded to a mucronate apex but scarcely acuminate:

J. Corolla only slightly pubescent outside the base; leaves very shortly narrowed to the base; Yunnan species . . . . . **Scottianum.**

J. Corolla densely pubescent all over the outside; leaves narrowed from about the middle to the base; Siam species . . **Ludwigianum.**

I. Leaves acutely triangular-acuminate:

J. Scales on the lower surface of the leaves not overlapping, small and rather fleshy; Chinese species **pilicalyx.**

J. Scales on the lower surface of the leaves overlapping, fairly large and dry-flaky; Siamese species **Surasianum.**

F. Scales on the lower surface of the leaves lax, about their own diameter apart or more:

G. Flowers solitary or rarely paired at the end of the shoots; leaves oblanceolate or oblong-lanceolate:

H. Calyx well developed, deeply lobed, the posterior lobe $\frac{1}{4}$ in. long; leaves with rather distinct nerves below . . . . . **ciliipes.**

H. Calyx rim-like or shortly lobed:

I. Young branchlets and leaf-margins not bristly or only very slightly so at the base or when very young; Yunnan species . . **supranubium.**

I. Young branchlets and leaf-margins very bristly, the older leaves becoming glabrous; Assam species **formosum.**

KEY TO SPECIES OF **MADDENII** SERIES—*Contd.*

G. Flowers usually 3 or more at the end of the shoots; leaves rarely oblanceolate:

H. Leaf-scales not more than their own diameter apart or only slightly more:

I. One-year-old shoots very slightly or not at all bristly hairy:

J. Leaves with numerous lateral nerves (about 10) on each side of the midrib, very prominent below; epiphyte . . . . **dendricola.**

J. Leaves with few lateral nerves (about 5 on each side), mostly rather obscure below:

K. Calyx distinctly lobed, the lobes fringed with bristly hairs; leaves very glaucous between the scales below; corolla $2\frac{1}{2}$ in. long **carneum.**

K. Calyx not fringed with hairs:

L. Corolla 3 in. long; stamens longer than the corolla-tube; Yunnan species . **lasiopodum.**

L. Corolla 2 in. long; stamens not as long as the corolla-tube; Siamese species . **Smilesii.**

I. One-year-old shoots more or less densely bristly:

J. Leaves oblanceolate to oblong-oblanceolate; flowers white, with a yellowish blotch within the back of the tube; Kweichow species . . **Lyi.**

J. Leaves obovate; flowers white, spotted with red inside; Assam species . . **Johnstoneanum.**

H. Leaf-scales 2-4 times their own diameter apart; Eastern India and Siamese species:

I. Corolla-tube equally scaly all over the outside:

J. Leaves not setose on the margin:

K. Style 2 in. long, a little longer than the stamens:

L. Leaves gradually acuminate; scales below about 4 times their own diameter apart; corolla-tube $\frac{3}{4}$ in. long; fruit $1\frac{1}{4}$ in. long; flowers white, with yellow blotch . . **taronense.**

L. Leaves abruptly and shortly acuminate; scales below about 3-$3\frac{1}{2}$ times their own diameter apart; corolla-tube $1\frac{1}{2}$ in. long; flowers white, marked with purplish pink bands . **notatum.**

K. Style 3 in. long, much longer than the stamens; leaf-scales about 2 times their own diameter apart . . . . . **inaequale.**

J. Leaves and young branchlets setose-pubescent; corolla white and tinged with yellow and rose or red, scaly but not pubescent outside **formosum.**

I. Corolla-tube scaly only on the side next the axis of the inflorescence (adaxial side):

J. Young branchlets not bristly; leaves distinctly obovate; corolla white or tinged with pale green outside, the lobes with crinkled margins **Veitchianum.**

J. Young branchlets, leaves and leaf-stalks with bristly hairs; leaves elongate-oblong-elliptic; corolla **Cubittii.**

D. Flowers yellow all over or greenish yellow:

E. Mature leaves densely scaly on the upper surface, very green below between the scales; flowers several in each truss; South-Western Burmese species **burmanicum.**

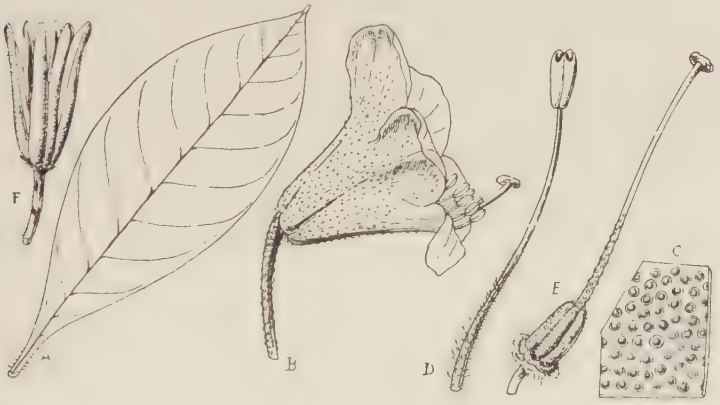
E. Mature leaves more or less scaly on the upper surface, glaucous below between the scales; flower often solitary; Western Yunnan species . **pachypodum.**

SUBSERIES CILIICALYX

RHODODENDRON BURMANICUM, *Hutchinson.*

A very distinct species (see figure) in the Maddenii series and distinguished from all others of that group by the following associated characters :—

Leaves : oblanceolate to obovate, when mature densely scaly on the upper surface and below, the scales much less than their own diameter apart, sometimes contiguous or slightly overlapping, very green below between the scales.



Rhododendron burmanicum, *Hutchinson.*
A. Typical leaf. B. Flower. C. Lower surface of leaf. D. Stamen. E. Calyx and pistil. F. Fruit.

Inflorescence : 5-6-flowered, umbellate.

Corolla : greenish-yellow or greenish-white, sweet-scented, scaly all over the outside.

Habitat : South-Western Burma ; Mt. Victoria.

RHODODENDRON CARNEUM, *Hutchinson.*

Illustration—Hutchinson in *Bot. Mag.*, t. 8634 (1915).

Habit : shrub 3 ft. high ; twigs densely scaly.

Leaves : *elliptic-obovate,* subacute, slightly wedge-shaped at the base, 2-4½ in. long, 1¼-1½ in. broad, deep green, *closely reticulate* and glabrous above, glaucous and scaly with yellow scales below ; leaf-stalks up to ⅔ in. long, densely scaly.

Inflorescence : terminal, 4-5-flowered ; flower-stalks scaly.

Flowers : flesh-coloured or whitish pink.

Calyx : 5-lobed, *2 lobes rounded-ovate,* fringed with hairs at the tip and densely scaly outside.

Corolla : 2½ in. long ; tube sparingly scaly outside.

Stamens : *usually 12,* with spreading hairs in their lower half.

Ovary : 6-celled, densely scaly ; style densely scaly, pink.

Capsule :

Habitat : Upper Burma, 7500 ft. ; open grassy hillsides away from large trees.

RHODODENDRON CILIATUM, *Hook. f.*

Illustrations—Hook. f. *Rhod. Sikkim Himal.*, t. 24 (1851) ; *Bot. Mag.*, t. 4648 (var. *roseo-album*) ; Lindl. & Paxt. *Fl. Gard.*, t. 83.

Habit : shrub up to 6 ft. high, often procumbent on rocks ; bark peeling off readily ; young branches setose.

Leaves : elliptic or oblong-elliptic, rounded at base, $1\frac{1}{2}$-$3\frac{1}{2}$ in. long, $\frac{2}{3}$-$1\frac{1}{2}$ in. broad, *setose above*, laxly scaly below with a few bristles on the midrib, the scales small and about 2-3 times their own diameter apart ; leaf-stalks $\frac{1}{4}$ in. long, *setose with long hairs*.

Inflorescence : 2-4-flowered, very shortly racemose ; flower-stalks $\frac{1}{3}$ in. long, densely bristly and finely scaly.

Flowers : nodding, white to tinged with rose.

Calyx : 5-lobed to near the base, $\frac{1}{3}$ in. long, lobes broadly ovate-rounded, nervose, *densely fringed with long stiff hairs*, sparingly scaly outside at base.

Corolla : about $1\frac{1}{2}$-2 in. long, 5-lobed ; tube broad, *glabrous outside* ; lobes notched.

Stamens : 10, as long as corolla-tube, densely pubescent towards base.

Ovary : 5-celled, scaly ; style as long as corolla, *not scaly*.

Capsule : $\frac{2}{3}$ in. long, with persistent calyx.

Habitat : Sikkim Himalaya, 9000-11,000 ft.

RHODODENDRON CILIICALYX, *Franch.*

(R. ATENTSIENSE, *Hand.-Mzt.*)

ILLUSTRATION—*Bot. Mag.*, t. 7782 (1901).

HABIT : shrub up to 10 ft. high ; young branchlets loosely covered with small scales, sometimes strigose.

LEAVES : elliptic, obovate-elliptic or oblong-lanceolate, rather acutely pointed, obtuse at the base, $2\frac{1}{2}$-$3\frac{1}{2}$ in. long, $\frac{3}{4}$-$1\frac{1}{3}$ in. broad, leathery, reticulate above, glaucous beneath and scaly, the scales more than their own diameter apart, the surface between the scales densely covered with papillae (in cultivation these sometimes absent) ; leaf-stalks $\frac{1}{2}$-$\frac{2}{3}$ in. long, scaly, often with a few bristles on the edges.

INFLORESCENCE : about 3-flowered, umbellate ; flower-stalks $\frac{1}{2}$-$\frac{2}{3}$ in. long, densely scaly.

FLOWERS : white or rose.

CALYX : variable, 5-lobed to near the base ; lobes up to $\frac{1}{4}$ in. long, laxly scaly outside, bristly with slender hairs on the margins.

COROLLA : widely funnel-shaped ; tube shorter than lobes, 1-$1\frac{1}{4}$ in. long, not scaly outside but slightly pubescent near the base ; lobes 5, ovate-orbicular, $1\frac{1}{4}$ in. long, sometimes with a few golden scales on back.

STAMENS : 10-11, long-pilose in lower third.

OVARY : 6-celled, densely scaly ; style scaly and pubescent near the base, glabrous above.

CAPSULE : 6-valved, $\frac{3}{4}$ in. long, thick, oblique at the base, densely scaly, girt at base with calyx and tomentose disk.

HABITAT : Western Yunnan ; about 7300 ft. or more, sides of rocky hills.

RHODODENDRON CILIIPES, *Hutchinson, new species.*

Illustration—

Habit : shrub ; branchlets bristly when young.

Leaves : *oblong-lanceolate*, rather abruptly but very *acutely acuminate*, rounded to a subacute base, 2-2½ in. long, ¾-1 in. broad, at first with *bristly hairs on the margin*, these at length falling off, with golden scales below, the scales 1-2 times their own diameter apart ; lateral nerves about 6 on each side, distinct below ; leaf-stalks ⅓ in. long, fringed with bristles.

Inflorescence : *1-flowered* ; flower-stalk ¼ in. long, scaly.

Flowers : white, with green or yellowish blotch inside the base, fragrant.

Calyx : well developed, the *posterior lobe ¼ in. long*, scaly outside towards the base, more or less bristly on the margins.

Corolla : 2¼ in. long, 5-lobed ; tube scaly all over the outside, pubescent towards the base.

Stamens : 10, shorter than corolla, pubescent in the lower half.

Ovary : densely scaly ; style as long as corolla, scaly in lower half.

Capsule :

Habitat : Yunnan ; Shweli—Salween Divide, 10,000 ft. ; on cliffs and humus-covered boulders in side valleys. [Type *Forrest* 26384 ; also *Forrest* 25484.]

RHODODENDRON CUBITTII, *Hutchinson.*

Illustration—

Habit : branchlets purplish brown, sparingly scaly, *with a few long stiff hairs.*

Leaves : *elongate-oblong-elliptic,* obtuse at the base, gradually narrowed to a *long mucronate apex,* 4 in. long, $1\frac{1}{3}$ in. broad, leathery, soon glabrous above, scaly below, the scales *slightly more than their own diameter apart,* closely papillous between ; leaf-stalks $\frac{1}{2}$-$\frac{3}{4}$ in. long, with a few *stiff hairs on the margin.*

Inflorescence : *2-flowered* ; flower-stalks $\frac{1}{6}$ in. long, densely scaly.

Flowers : colour ?

Calyx : *oblique, undulate,* short, densely scaly outside, *not ciliate.*

Corolla : $2\frac{3}{4}$ in. long, 5-lobed, widely funnel-shaped ; tube *scaly only on the adaxial side,* softly *pubescent near the base* ; lobes laxly scaly outside.

Stamens : 10, pubescent in their lower part.

Ovary : 6-celled, densely scaly ; style *laxly scaly in lower third of its length.*

Capsule :

Habitat : Northern Burma ; Bhamo Division, 5800 ft.

RHODODENDRON CUFFEANUM, *Craib.*

Illustration—Craib in *Bot. Mag.*, t. 8721 (1917).

Habit : loosely branched shrub ; young shoots covered with brown peltate scales.

Leaves : oblanceolate or oblong-oblanceolate, gradually and shortly acuminate, gradually narrowed to the base, up to 4 in. long and 1¼ in. broad, *conspicuously reticulate above*, rather densely scaly below, the scales unequal and about their own diameter apart, *densely papillous between the scales* ; stalks ½ in. long, scaly.

Inflorescence : 5-flowered, umbellate ; flower-stalks up to ⅔ in. long, densely scaly.

Flowers : white, with a large yellow blotch in the upper side of the corolla-tube.

Calyx : *leafy, about ⅓ in. long*, unequally 5-lobed, lobes scaly, *fringed with a few weak hairs*.

Corolla : 2½ in. long ; tube softly pubescent outside near the base, not lepidote except near the 5 lobes.

Stamens : 10, longer than the corolla-tube, softly villous-pubescent in their lower half.

Ovary : 6-celled, densely scaly ; style scaly towards the base.

Habitat : South-Western Burma ; Mt. Victoria.

RHODODENDRON DENDRICOLA, *Hutchinson.*

Illustration—Hutchinson in *Notes Roy. Bot. Gard. Edinb.* 12 : 61, fig. 8 (1919).

Habit : Small shrub (*generally epiphytic at the tops of trees* up to 60 ft. high).

Leaves : oblong-elliptic, rather abruptly and subacutely acuminate, rounded-obtuse at the base, 3-4½ in. long, 1¼-2 in. broad, leathery, glabrous above, densely scaly beneath, *scales not quite their own diameter apart,* densely papillous between ; leaf-stalks ½ in. long, scaly.

Inflorescence : 3-flowered, umbellate ; flower-stalks ⅓ in. long, scaly.

Flowers : white, tinged with pink, with *orange mark on lower corolla lobes.*

Calyx : an undulate rim, scaly outside, with a few hairs on the margin.

Corolla : 3¼ in. long ; tube widely funnel-shaped, *densely scaly* outside and minutely *pubescent around the base* ; lobes 5, rounded, scaly outside.

Stamens : 10, densely hairy in lower half.

Ovary : 6-celled, ribbed, densely scaly ; style as long as corolla, scaly in lower half.

Capsule : not seen.

Habitat : Northern Burma ; Nmai Valley, generally epiphytic on trees.

RHODODENDRON FORMOSUM, *Wallich.*

(R. Gibsonii, *Paxton.*)

Illustrations—Wall. *Pl. Asiat. Rar.* 3 : t. 207 (1832) ; Hook. *Bot. Mag.*, t. 4457 (1849).

Habit : shrub, young parts finely scaly and *bristly.*

Leaves : crowded, variable, *oblanceolate to obovate*, subacute, gradually narrowed to the base, $1\frac{1}{4}$-$2\frac{3}{4}$ in. long, up to $1\frac{1}{4}$ in. broad, rather thin, usually *fringed with long white hairs on the margin*, scaly below, the scales 1-$1\frac{1}{2}$ times their own diameter apart, densely papillous between ; leaf-stalks *often fringed with hairs.*

Inflorescence : 2-3-flowered ; flower-stalks up to $\frac{1}{2}$ in. long, densely scaly.

Rhododendron formosum, *Hook. f.*

A. Typical leaf. A¹. Lower surface of same. B. Flower. C. Stamen. D. Calyx and pistil. E. Transverse section of ovary. F. Fruit.

Flowers : white, tinged with yellow and rose, with 5 red stripes outside, sweet-scented.

Calyx : small, undulate, densely scaly outside, sometimes with one or two long hairs on the margin.

Corolla : about $2\frac{1}{4}$ in. long, tube scaly outside, softly pubescent towards the base, lobes 5.

Stamens : 10, densely pubescent in lower half.

Ovary : 6-celled, densely scaly ; style scaly in lower $\frac{1}{2}$ or $\frac{3}{4}$.

Capsule : $\frac{3}{4}$ in. long, ribbed, densely scaly.

Habitat : Assam ; Khasia Hills, 5000-5500 ft.

RHODODENDRON INAEQUALE, *Hutchinson.*

Illustration—

Habit : shrub 3-6 ft. high ; branchlets umbellate, young ones scaly and sparingly strigose-pubescent.

Leaves : *lanceolate or elliptic-oblanceolate,* acuminate to an obtuse mucronate apex, acute or subacute at the base, $2\frac{1}{2}$-5 in. long, $\frac{1}{2}$-$1\frac{1}{2}$ in. broad, soon glabrous above, scaly below, the scales slightly unequal and *2-3 times their own diameter apart,* densely papillous between ; leaf-stalks $\frac{2}{3}$ in. long, scaly.

Inflorescence : about *6-flowered,* umbellate ; flower-stalks $\frac{2}{3}$ in. long, scaly.

Flowers : colour ?

Calyx : very oblique, saucer-shaped, $\frac{1}{12}$ in. long, undulate, scaly outside.

Corolla : laxly scaly all over the outside, known only in withered state.

Stamens : 10, densely pubescent in lower third.

Ovary : 6-celled, $\frac{1}{3}$ in. long, closely scaly ; *style very long,* up to 3 in. long, laxly scaly in lower half.

Capsule : very oblique, $1\frac{1}{4}$ *in. long,* densely scaly, the *style persisting for some time.*

Habitat : Assam ; Khasia Hills ; Kollong Rock, 4000-5600 ft.

RHODODENDRON ITEOPHYLLUM, *Hutchinson.*

Illustration—

Habit : shrub up to 6 ft. high ; young branchlets densely scaly and sparingly setose.

Leaves : *linear or linear-lanceolate,* acute at both ends, up to $3\frac{1}{2}$ in. long and $\frac{2}{3}$ in. broad, sparingly scaly and sometimes a little bristly above, scaly below, the scales about their own diameter apart, closely papillous between ; leaf-stalks short, *winged with the decurrent leaf-blade,* ciliate.

Inflorescence : *about 3-flowered* ; flower-stalks $\frac{1}{4}$ in. long, densely scaly.

Calyx : small, *not lobed,* scaly outside.

Corolla : $2\frac{1}{4}$ in. long, sparingly scaly all over the outside, *not hairy* ; lobes 5, scaly towards the middle.

Stamens : 10, densely pubescent in lower half.

Ovary : 6-celled, scaly ; style sparingly scaly in lower half.

Capsule : straight, $\frac{2}{3}$ in. long, the central axis tipped with the persistent base of the style.

Habitat : Assam ; Khasia Hills, 2000 ft.

RHODODENDRON JOHNSTONEANUM, *Watt.*

Illustration—

Habit: large bush; branchlets finely scaly and *bristly with hairs.*

Leaves: *elliptic* or slightly *obovate-elliptic,* rounded to an obtuse mucro at the apex, 2-4 in. long, $\frac{3}{4}$-$1\frac{1}{2}$ in. broad, *bristly ciliate when young,* densely scaly but soon glabrous above, scaly below, the *scales very dense and nearly contiguous*; leaf-stalks up to $\frac{1}{2}$ in. long, fringed with hairs, closely scaly.

Inflorescence: 4-flowered; flower-stalks $\frac{1}{3}$ in. long, densely scaly.

Flowers: white, spotted with red inside the back lobe which has a yellow blotch at the base, very sweet-scented.

Calyx: oblique, very short, *with a dense fringe of long hairs.*

Corolla: $2\frac{1}{3}$ in. long, tube *scaly and softly pubescent* outside; lobes 5, scaly along the middle outside.

Stamens: 10, pubescent in their lower half.

Ovary: 6-celled, scaly; style scaly in the lower two-thirds.

Capsule: 6-celled, broad, about $\frac{3}{4}$ in. long, scaly.

Habitat: Assam; Manipur, 6000-7500 ft. and up to 11,000 ft.

RHODODENDRON LASIOPODUM, *Hutchinson.*

Illustration—

Habit : shrub 16 ft. high ; branchlets scaly.

Leaves : *broadly elliptic, rounded at both ends* or shortly triangular-acuminate at the apex, $2\frac{1}{4}$-$4\frac{1}{4}$ in. long, $1\frac{1}{4}$-$2\frac{1}{4}$ in. broad, leathery, scaly above when young and fringed with hairs, soon glabrous, *glaucous and rather densely scaly below*, the scales rusty, unequal in size and *less than their own diameter apart*, the larger scattered, papillous between the scales ; leaf-stalks $\frac{1}{3}$ in. long, densely scaly.

Inflorescence : 2-flowered ; flower-stalks tomentose at the base, $\frac{1}{3}$ in. long, densely scaly.

Flowers : white, yellow inside the base, fragrant.

Calyx : small, oblique, undulate, scaly outside, not fringed with hairs.

Corolla : narrowly funnel-shaped, laxly scaly all over the outside ; tube $1\frac{3}{4}$ in. long, softly pubescent towards the base.

Stamens : 10, softly pilose in lower half.

Ovary : 5-celled, densely scaly ; style scaly in lower half.

Capsule : 1 in. long, straight, densely scaly.

Habitat : Western Yunnan ; Shweli—Salween Divide, lat. 25° 5′ N., 8000-9000 ft., in pine forest.

RHODODENDRON LUDWIGIANUM, *Hosseus.*

Illustration—

Habit : shrub up to $4\frac{1}{2}$ ft. ; branchlets almost leafless at flowering time, closely warted with leaf-scars.

Leaves : *obovate, narrowed to the base*, apex triangular, $1\frac{1}{2}$ in. long, $\frac{3}{4}$ in. broad, leathery, densely scaly below, *scales about* $\frac{1}{2}$ *their diameter apart*, papillous between the scales ; *lateral nerves distinct below* ; leaf-stalks $\frac{1}{6}$ in. long, scaly.

Inflorescence : 2-3-flowered ; *axis densely villous* ; flower-stalks scarcely $\frac{1}{4}$ in. long, densely scaly.

Flowers : white and rose.

Calyx : small, densely scaly, sparingly fringed with hairs.

Corolla : about $2\frac{1}{2}$ in. long, *densely and softly pubescent outside*, scaly on back of the 5 lobes and *down one side of tube.*

Stamens : 10, pilose in lower third.

Ovary : 6-celled, scaly ; style scaly in lower half.

Capsule : not seen.

Habitat : Siam ; Doi Djeeng Dao, 6600 ft.

RHODODENDRON LYI, *Léveillé.*

Illustrations—Hutchinson in *Notes Roy. Bot. Gard. Edinb.* 12 : 56 (1919) ; Stapf. in *Bot. Mag.*, t. 9051 (1924).

Habit : shrub 6 ft. high ; branchlets scaly and *bristly with rather long hairs.*

Leaves : oblanceolate or oblong-oblanceolate, mucronate at the apex, shortly narrowed at the base, $1\frac{1}{2}$-3 cm. long, $\frac{1}{2}$-$1\frac{1}{4}$ in. broad, leathery, glossy and reticulate above, scaly below, the scales rather unequal and *less than their own diameter apart,* densely papillous between the scales ; leaf-stalks $\frac{1}{4}$ in. long, at first fringed with hairs, scaly.

Inflorescence : up to 4-flowered ; flower-stalks $\frac{1}{6}$ in. long, densely scaly.

Flowers : white, with a yellowish blotch within the back of the tube, scented.

Calyx : $\frac{1}{12}$ in. long, 5-lobed, densely scaly outside and fringed with a few long hairs, the lobes enlarging in fruit.

Corolla : 5 cm. long, widely funnel-shaped, scaly only on the back of the 5 rounded lobes.

Stamens : 10, pubescent in the lower part.

Ovary : 6-celled, scaly ; style much longer than the corolla, scaly in the lower two-thirds.

Capsule : 1 in. long, constricted at each end, scaly, tipped by a small persistent portion of the style, with the persistent enlarged calyx at the base.

Habitat : Kweichow Province, China.

RHODODENDRON MISSIONARUM, *Léveillé.*

Illustration—

Habit : shrub, young branchlets pilose.

Leaves : obovate-oblanceolate, narrowed to the base, apex triangular, mucronate, 2-2¾ in. long, ⅔-1¼ in. broad, leathery, glaucous and scaly below, the scales slightly unequal and less than their own diameter apart, densely papillous between the scales ; leaf-stalks ¼-⅓ in. long, scaly.

Inflorescence : 2-3-flowered ; flower-stalks ⅓ in. long, arising from the same level, densely scaly with flaky scales.

Flowers : violet or white.

Calyx : minute, obscurely 5-lobed, densely scaly outside and *fringed with stiff hairs.*

Corolla : 5-lobed, 5 cm. long, not or hardly scaly outside ; tube funnel-shaped, minutely pubescent towards the base outside.

Stamens : 10, exserted, shaggy hairy in lower third.

Ovary : 5-celled, scaly ; style scaly in lower half or two-thirds.

Capsule : ½ in. long, scaly and wrinkled.

Habitat : North-Eastern Yunnan, 9000 ft., on rocks.

RHODODENDRON NOTATUM, *Hutchinson, new species.*

Illustration—

Habit : small epiphytic bush or shrub ; branchlets very laxly scaly when young.

Leaves : obovate or obovate-elliptic, abruptly and shortly acuminate, narrowed to the base, 2-4 in. long, 1-1¾ in. broad, loosely scaly on both surfaces, the scales below about 3-3½ times their own diameter apart, of a uniform size and brown colour ; leaf-stalk ⅓-½ in. long.

Inflorescence : about 3-flowered, terminal, umbellate ; flower-stalks ½ in. long, laxly scaly.

Flowers : white, marked with a purplish pink band on the angles, slightly scented.

Calyx : a mere rim, scaly outside.

Corolla : 2 in. long, widely funnel-shaped ; tube very loosely scaly outside and slightly pubescent ; lobes 5.

Stamens : 10, a little longer than the corolla-tube, pubescent in the lower half.

Ovary : 5-celled, densely scaly ; style scaly in the lower third of its length, about as long as the corolla.

Capsule : straight, ⅔ in. long, valves not keeled.

Habitat : North-East Burma, Seinghku Wang, 5000-5500 ft., abundant on trees and rocks in the river bed. [Type *Ward* 6711 ; also *Ward* 6687 (in fruit) from Nam Tamai, 3500 ft. ; and *Ward* 7630, from valley of Seinghku.]

RHODODENDRON PACHYPODUM. *Balf. f. & W. W. Smith.*

Illustration—

Habit: shrub 5 ft. high; branchlets scaly.

Leaves: *oblanceolate or elliptic-oblanceolate*, long-acuminate, gradually narrowed to the base, up to 4 in. long and 1¼ in. broad, soon glabrous above, reticulate, *very densely scaly and glaucous below*, the scales small and about half their own diameter apart, densely papillous between; leaf-stalks ⅛ in. long, scaly, sometimes with a few weak hairs when young.

Inflorescence: about 3-flowered or less; flower-stalks ⅓ in. long, densely scaly.

Flowers: *yellow*.

Calyx: oblique, ⅛ in. long, scaly outside, *fringed with hairs*.

Corolla: scaly all over the outside, about 2 in. long; tube minutely pubescent near the base outside; lobes 5.

Stamens: 10, pubescent in the lower half.

Ovary: 6-celled, densely scaly; style scaly in the lower two-thirds.

Capsule: ¾ in. long, 6-ribbed, densely covered with golden scales.

Habitat: Western Yunnan, Tali Range, 9000-10,000 ft., in open scrub and stony pastures.

RHODODENDRON PILICALYX, *Hutchinson*.

Illustration—

Habit : shrub 4 ft. high ; branchlets scaly.

Leaves : obovate or obovate-elliptic, acute at apex, a little narrowed to an obtuse or somewhat cuneate base, 2-4 in. long, $\frac{3}{4}$-$1\frac{1}{2}$ in. broad, very densely *scaly below with reddish scales*, the latter *contiguous*, very small, with a few larger and blacker ones scattered here and there, densely papillous between ; leaf-stalks $\frac{1}{2}$ in. long, scaly and ciliate.

Inflorescence : 3-5-flowered ; flower-stalks $\frac{1}{2}$ in. long, densely scaly.

Flowers : white with a little pink.

Calyx : unequally 5-lobed, scaly outside, *closely fringed with long stiff hairs*.

Corolla : $2\frac{3}{4}$ in. long, 5-lobed, scaly all over the outside ; tube minutely pubescent outside the base.

Stamens : 11-13, softly hairy in lower third.

Ovary : 5-celled, scaly ; style scaly in lower two-thirds.

Capsule : ?

Habitat : South-Eastern Yunnan, Mengtsz, 8000 ft.

RHODODENDRON PSEUDOCILIICALYX, *Hutchinson.*

Illustration—

Habit : shrub ; one-year-old shoots densely bristly, minutely scaly.

Leaves : elliptic or elliptic-lanceolate, equally narrowed to both ends, obtusely mucronate at the apex 2½-3 in. long, 1-1¼ in. broad, thinly leathery, laxly reticulate above and with a few scales, glaucous-green below and rather densely covered with very unequal-sized pale orange-yellow scales, the scales less than their own diameter apart, with lax papillae between ; leaf-stalk ¼-⅓ in. long, densely scaly, fringed with weak hairs.

Inflorescence : 3-4-flowered ; flower-stalks ⅓ in. long, densely scaly.

Flowers : colour as in *ciliicalyx.*

Calyx : saucer-shaped, undulately lobed, $\frac{1}{12}$ in. long, scaly outside, the tops of the lobes sometimes with a few hairs.

Corolla : about 2½ in. long ; tube 1½ in. long, slightly pubescent outside at the base, sometimes a scale here and there ; lobes 5, scaly outside and on the margin.

Stamens : 10, exserted, pubescent in the lower part.

Ovary : 5-celled, densely scaly ; style scaly in the lower half.

Capsule : ?

Habitat : Uncertain ; probably Yunnan. [Type No. 7167 *Hort. Vilmorin.*]

RHODODENDRON ROSEATUM, *Hutchinson.*

Illustration—

Habit : shrub up to 10 ft. high ; branchlets with small scales.

Leaves : *ovate*, acutely triangular-acuminate, *broadly rounded at the base*, 3-4 in. long, $1\frac{1}{4}$-$1\frac{3}{4}$ in. broad, leathery, at first scaly but soon glabrous above, glaucous and *very densely scaly below*, scales unequal in size, reddish, much less than their own diameter apart or nearly contiguous, densely papillous between the scales ; leaf-stalks $\frac{1}{3}$ in. long, scaly.

Inflorescence : 4-flowered, umbellate ; flower-stalks $\frac{1}{3}$ in. long, densely scaly.

Flowers : white, faintly flushed with rose outside.

Calyx : small and obscurely 5-lobed, about $\frac{1}{16}$ in. long, densely scaly all over the outside, *densely ciliate with long weak hairs.*

Corolla : widely funnel-shaped, *densely scaly* all over the outside, *especially the tube* ; tube $1\frac{1}{4}$ in. long, lobes 5, rounded-elliptic, $1\frac{1}{2}$ in. long, at first fringed with scales.

Stamens : 10, exserted, softly hairy in their lower third.

Ovary : 6-celled, densely scaly ; style densely scaly in the lower half.

Habitat : Western Yunnan, 25° 20′ N., 9000 ft., in open scrub.

RHODODENDRON RUFOSQUAMOSUM, *Hutchinson.*

ILLUSTRATION—

HABIT : shrub 3 ft. high ; branchlets scaly.

LEAVES : *oblanceolate,* obtusely triangular-acuminate at the apex, *gradually narrowed to an acute base,* $2\frac{3}{4}$-$4\frac{3}{4}$ in. long, $\frac{3}{4}$-$1\frac{1}{2}$ in. broad, strongly reticulate above and scaly towards the midrib, densely reddish scaly below, the *scales about* $\frac{1}{2}$ *their own diameter apart,* densely papillous between ; leaf-stalks $\frac{2}{3}$ in. long, scaly.

INFLORESCENCE : about 3-flowered ; flower-stalks $\frac{1}{4}$ in. long, scaly.

FLOWERS : white, pink in bud.

CALYX : small, *plate-like,* scarcely lobed, densely scaly outside and *closely fringed with long weak hairs.*

COROLLA : about $2\frac{3}{4}$ in. long, scaly all over the outside ; tube softly pubescent outside the base ; lobes 5.

STAMENS : 10, softly pubescent in the lowermost quarter.

OVARY : 6-celled, scaly, with a tomentose disk at base ; style scaly in the lower three-quarters.

CAPSULE : ?

HABITAT : South-Western Yunnan, Szemao Hills, 4800 ft.

RHODODENDRON SCOPULORUM, *Hutchinson, new species.*

Illustration—

Habit : bushy shrub 6-8 ft. high and nearly as much through.

Leaves : crowded and subverticillate, *obovate-oblanceolate*, rounded to a small blunt mucro at the apex, subacute at the base, 2-2½ in. long, ¾-1¼ in. broad, thick and leathery, *light glaucous-green* (when dried), smooth and not scaly above, very laxly and minutely scaly below, *the scales about 3-4 times their own diameter apart* ; leaf-stalks ½ in. long, not fringed with hairs except when very young.

Inflorescence : 3-flowered ; flower-stalks ¼ in. long, loosely scaly.

Flowers : probably pink.

Calyx : deeply 5-lobed, lobes ovate, $\frac{1}{12}$ in. long, slightly scaly, not fringed with hairs.

Corolla : 1¾ in. long, loosely covered with small scales outside and *finely pubescent all over.*

Stamens : 10, softly and densely pubescent in the lower third.

Ovary : 6-celled, scaly ; style glabrous.

Capsule : 6-celled, straight, ¾ in. long, very thick, finely scaly, the *axis capped by about ¼ in. of the persistent style.*

Habitat : Eastern Tibet, Tsangpo Gorge, 6000 ft., on boulder screes fully exposed to the sun, and in thickets on steep rocky slopes. [Type *Ward* 6354 (fl.) ; 6325 (fruit).]

RHODODENDRON SCOTTIANUM, *Hutchinson.*

Illustration—

Habit : shrub up to 12 ft. high ; branchlets densely scaly, not hairy.

Leaves : *obovate* or more rarely *elliptic-obovate,* slightly narrowed to a broadish base, mucronate at the apex, $2\frac{1}{4}$-4 in. long, 1-$1\frac{1}{2}$ in. broad, scaly above but soon glabrous, densely scaly below, the scales nearly contiguous, densely papillous between the scales ; leaf-stalks $\frac{1}{3}$ in. long, scaly, setose when young like the young leaves.

Inflorescence : 2-4-flowered, umbellate ; flower-stalks $\frac{1}{3}$-$\frac{2}{3}$ in. long, densely scaly.

Flowers : white, occasionally flushed with rose outside, with a yellow blotch inside the base, fragrant.

Calyx : mostly small and saucer-shaped, obscurely lobed or rarely *one lobe elongated to about* $\frac{1}{3}$ *in. long,* densely scaly outside and *fringed with long hairs.*

Corolla : widely funnel-shaped, *densely scaly all over the outside,* 5-lobed, tube *softly pubescent outside the base.*

Stamens : 10-11, pilose in lower fourth.

Ovary : 5-7-celled, densely scaly ; style scaly in its lower two-thirds.

Capsule : ?

Habitat : Western Yunnan, 6000-8000 ft., open rocky places.

RHODODENDRON SMILESII, *Hutchinson.*

Illustration—

Habit : tree 20 ft. high ; branchlets scaly and with a few bristly hairs.

Leaves : *obovate-oblanceolate or oblong-oblanceolate,* obtusely mucronate, gradually narrowed from about the middle to an obtuse base, $1\frac{3}{4}$-$2\frac{1}{2}$ in. long, $\frac{2}{3}$-1 in. broad, dull and glabrous above, densely scaly below, the scales dark brown and less than their own diameter apart, papillous between ; leaf-stalks densely scaly, $\frac{1}{6}$ in. long.

Inflorescence : 3-flowered ; *axis villous* ; flower-stalks $\frac{1}{8}$ in. long, scaly.

Flowers : white.

Calyx : small, $\frac{1}{10}$ in. long, scaly outside, *not ciliate.*

Corolla : small, $1\frac{1}{4}$ in. long, scaly nearly all over the outside ; lobes 5.

Stamens : 10, pubescent in the lower fourth.

Ovary : 5-celled, densely scaly ; style scaly in lower half.

Capsule :

Habitat : Northern Siam.

RHODODENDRON SUPRANUBIUM, *Hutchinson.*

Illustration—Hutchinson in *Notes Roy. Bot. Gard. Edinb.* 12 : 68, fig. 9 (1919).

Habit : shrub up to 4 ft. high ; branchlets laxly scaly, the young ones densely so.

Leaves : *oblanceolate or obovate-oblanceolate,* rarely elliptic, shortly acuminate, 1½-3½ in. long, ½-1¼ in. broad, densely scaly above when young and ciliate, glabrous when mature, *glaucous below and densely scaly, the scales unequal and less than their own diameter apart,* densely papillous between ; leaf-stalks ⅓ in. long, sometimes bristly.

Inflorescence : up to 3-flowered, but often 1-flowered ; flower-stalks ⅓ in. long, densely scaly.

Flowers : dull white, with rose exterior, fragrant.

Calyx : cupular, slightly lobed, $\frac{1}{12}$ in. long, scaly outside, usually *fringed with long hairs.*

Corolla : widely funnel-shaped ; tube 1¼ in. long, densely scaly outside and softly pubescent towards the base ; lobes 5, scaly outside.

Stamens : 10, densely hairy in lower half.

Ovary : 6-celled, densely scaly ; style scaly in lower half.

Capsule : 1 in. long, ⅓ in. thick, straight, rather closely scaly, *tipped by persistent base of style.*

Habitat : Yunnan, Tali Range, eastern flank, 10,000-12,000 ft. ; dry rocky situations and ledges of cliffs.

RHODODENDRON SURASIANUM, *Balf. f. & Craib.*

Illustration—

Habit : shrub 12 ft. high ; branchlets finely scaly.

Leaves : elliptic-obovate or oblong-obovate, rounded to a shortly cuneate base, acutely acuminate at the apex, $2\frac{1}{4}$-4 in. long, 1-$1\frac{1}{2}$ in. broad, glabrous above, *densely scaly below*, scales pale-brown and *contiguous or overlapping*, laxly papillous between the scales ; leaf-stalks $\frac{1}{3}$ in. long, scaly.

Inflorescence : 2-3-flowered, umbellate ; flower-stalks nearly $\frac{2}{3}$ in. long, densely scaly.

Flowers : pale pink.

Calyx : saucer-like, $\frac{1}{12}$ in. long, densely scaly outside and *bristly with short stiff hairs*.

Corolla : about 3 in. long ; tube *densely scaly outside* and finely pubescent near the base ; lobes 5, scaly outside.

Stamens : 10, pubescent towards the base.

Ovary : 5-celled, densely scaly ; style densely scaly in lower two-thirds.

Capsule :

Habitat : Northern Siam, 4500 ft., rocky ground in open evergreen jungle.

RHODODENDRON TARONENSE, *Hutchinson, new species.*

Illustration—

Habit : epiphytic shrub 10-15 ft. high growing high up on trees in the jungle ; older branchlets with very *smooth thin brown bark easily peeling off* ; young branchlets slightly scaly.

Leaves : narrowly elliptic to elliptic-lanceolate, acute at both ends, abruptly mucronate, 10-14 cm. long, 4-5·5 cm. broad, not scaly above, laxly scaly below, the scales small and *about 3-5 times their own diameter apart* ; lateral nerves *about 10 on each side*, slender and faint.

Inflorescence : *5-flowered*, umbellate ; flower-stalks $\frac{1}{2}$ in. long, densely scaly.

Flowers : white, with a large yellow blotch near the base, fragrant, slightly fleshy.

Calyx : *rim-like*, scaly outside.

Corolla : 2 in. long ; tube laxly scaly outside ; lobes 5.

Stamens : 10, nearly as long as corolla, pubescent in lower half.

Ovary : 6-celled, densely scaly ; style scaly in the lower quarter, longer than corolla.

Capsule : oblique at the base, $1\frac{1}{4}$ *in. long*, 6-celled, the valves closely warted-scaly, *not keeled*.

Habitat : Yunnan, Taron Valley, 4000-5000 ft. [Type *Ward* 5501.]

RHODODENDRON VALENTINIANUM, *Forrest.*

Illustration—

Habit : small shrub 3 ft. high, with rosettes of 4-5 small leaves at the ends of the shoots ; young twigs densely setose.

Leaves : elliptic or oblong-elliptic, $1\frac{1}{2}$ in. long, $\frac{3}{4}$ in. broad, setose-ciliate on the margin, setose above, densely scaly below, with more or less contiguous scales ; leaf-stalks up to $\frac{1}{3}$ in. long. setose and scaly.

Inflorescence : a 2-6-flowered, terminal umbel ; bracts persisting during flowering.

Flowers : bright yellow ; stalks $\frac{1}{6}$ in. long, setose and scaly.

Calyx : leafy, $\frac{1}{3}$ in. long ; lobes 5, oblong, scaly outside, densely woolly-setulose on the margin.

Corolla : about $1\frac{1}{3}$ in. long, 5-lobed, pubescent with long hairs on both sides, scaly all over the outside ; lobes fringed with scales.

Stamens : 10, shorter than corolla, white-woolly-hairy in lower part ; anthers pink.

Ovary : densely lepidote ; style scaly at the base.

Capsule : enclosed by the calyx.

Habitat : Yunnan, 25° 20′ N., 11,000 ft., open scrub.

RHODODENDRON VEITCHIANUM, *Hook.*

Illustration—Hook. *Bot. Mag.*, t. 4992 (1857).

Habit : shrub 3 ft. high or more, growing on rocks or on trees ; young branchlets scaly.

Leaves : *obovate-oblanceolate or elliptic-obovate*, narrowed to the base, obtusely acuminate, 2-4 in. long, $\frac{3}{4}$-$1\frac{1}{2}$ in. broad, scaly above when young, scaly below, the scales 1-$1\frac{1}{2}$ times their own diameter apart, closely papillous between ; leaf-stalks $\frac{1}{3}$ in. long, scaly.

Inflorescence : up to 5-flowered, umbellate ; flower-stalks $\frac{1}{3}$ in. long, scaly.

Flowers : white, slightly tinged outside with green.

Calyx : variable, short, lobes often with a few slender hairs on the margin, scaly outside.

Corolla : $2\frac{3}{4}$ in. long, widely funnel-shaped, *scaly mainly on the side next the axis*, often softly pubescent outside towards the base ; lobes 5, *with crinkled margins*, sparingly scaly outside.

Stamens : 10, hairy towards the base.

Ovary : 5-celled, densely scaly ; style scaly in the lower half.

Capsule : $1\frac{1}{4}$ in. long, about $\frac{1}{2}$ in. thick, scaly-rugose.

Habitat : Burma, Tenasserim and Siam, 4000-5500 ft., on rocks or trees.

SUBSERIES MADDENII

RHODODENDRON BRACHYSIPHON, *Balf. f.*

ILLUSTRATION—

HABIT : shrub 8 ft. high ; leafy branchlets closely scaly.

LEAVES : obovate or elliptic, narrowed to the base, rounded to a blunt mucro at apex, $2\frac{1}{4}$-5 in. long, 1-2 in. broad, glabrous and reticulate above, very densely covered with rusty scales beneath, the *scales nearly contiguous* ; lateral nerves 6-8 on each side of midrib, distinct below ; leaf-stalk up to $\frac{1}{3}$ in. long, closely scaly.

INFLORESCENCE : 2-3-flowered, terminal ; flower-stalks $\frac{1}{3}$ in. long, scaly.

FLOWERS : pink, scented.

CALYX : $\frac{1}{4}$ *in. long*, 5-lobed to near the base ; lobes unequal, scaly outside at the base.

COROLLA : 5-lobed, $1\frac{3}{4}$ *in. long*, scaly outside the tube and on the back of the lobes.

STAMENS : 20, unequal, exserted ; filaments pubescent in the lower third or half.

OVARY : 10-celled, rusty scaly ; style half as long as corolla, laxly scaly in the lower half, stigma large, lobulate.

HABITAT : Bhutan, 6000-7000 ft.

RHODODENDRON CALOPHYLLUM, *Nutt.*

ILLUSTRATION—Hutchinson in *Notes Roy. Bot. Gard. Edinb.* 12: p. 23 (1919).

HABIT: probably like *R. Maddenii.*

LEAVES: *widely obovate,* narrowed to the base, rounded to an obtuse point, 4 in. long, 2 in. broad, glabrous above, very *glaucous* and laxly scaly below, the *scales 2-3 times their own diameter apart*; lateral nerves about 6, slightly raised below; leaf-stalk scaly.

INFLORESCENCE: *4-5-flowered.*

FLOWERS: probably white.

CALYX: lobes short, subequal, obtuse.

COROLLA: narrowly tubular, fleshy; tube nearly straight, $1\frac{1}{2}$ in. long, *very densely scaly all over the outside*; lobes ovate-rounded, 1-$1\frac{1}{4}$ in. long, densely scaly outside.

STAMENS: about 15, glabrous, *not exserted*; anthers $\frac{1}{4}$ in. long.

OVARY and style not known.

CAPSULE: cylindric-ovate, obtuse, 10-celled.

HABITAT: Bhutan, southern slope of Oola Mt., 6000-7000 ft.

NOTE.—This is evidently a very rare plant which has never yet been in cultivation, those passing under this name being forms of *Maddenii.* The description is drawn up from one flower and one leaf at Kew.

RHODODENDRON CRASSUM, *Franch.*

Illustration—

Habit : shrub or tree up to 20 ft. high ; branchlets scaly.

Leaves : crowded and whorled, lanceolate or obovate-oblanceolate, subcuneate at the base, $2\frac{1}{4}$-$4\frac{3}{4}$ in. long, $\frac{3}{4}$-$2\frac{3}{4}$ in. broad, thick and rigid, glossy and veiny above, densely scaly below, scales rusty, *more or less contiguous* ; lateral nerves 8-12 on each side ; leaf-stalk $\frac{3}{4}$ in. long.

Inflorescence : 3-5-flowered ; flower-stalks stout, $\frac{2}{3}$ in. long, densely scaly.

Flowers : white.

Calyx : up to $\frac{1}{2}$ in. long, rather variable, 5-lobed to near the base, lobes membranous, glabrous.

Corolla : $2\frac{1}{4}$-$3\frac{1}{2}$ in. long, narrowly funnel-shaped, *densely scaly all over the outside* ; lobes 5, with wavy margins.

Stamens : 15-21, exserted ; filaments pubescent in the lower half ; anthers large.

Ovary : *10-celled*, densely scaly ; style scaly to near the apex, stigma large, disk-like.

Capsule : straight, $1\frac{1}{4}$ in. long, scaly, 10-ribbed.

Habitat : Western Yunnan, 7500-12,000 ft. ; Upper Burma, 8000-9000 ft.

RHODODENDRON EXCELLENS, *Hemsl. & Wils.*

Illustration—Hutchinson in *Notes Roy. Bot. Gard. Edinb.* 12 : 30, f. 3 (1919).

Habit : shrub 10 ft. high, with purplish scaly branchlets.

Leaves : oblong-elliptic, *rounded at both ends,* mucronate, 6-8 in. long, 1½-2¼ in. broad, glabrous above, glaucous and lepidote below, the scales about their own or a little less than their own diameter apart ; *lateral nerves 18-20 pairs,* distinct on both surfaces, looped and branched towards the margin ; leaf-stalk 1 in. long.

Inflorescence : 3-4-flowered ; flower-stalks ¾ in. long, densely scaly.

Flowers : white, about 3 in. in diameter.

Calyx : about ½ in. long, tubular, with 5 rounded lobes, glabrous except the scaly base.

Corolla : tubular, rather densely scaly outside the tube and on the back of the lobes ; tube 3 in. long ; lobes 5, 1 in. long.

Stamens : 15, shorter than the corolla-tube ; filaments pubescent in lower two-thirds ; *anthers large, ½ in. long.*

Ovary : 5-celled, densely scaly ; style scaly in lower third, stigma large and disk-like.

Habitat : Southern Yunnan, south of Mengtze, where it flowers in July. A very rare species.

RHODODENDRON MADDENII, *Hook. f.* Flowers white.

A. Portion of lower surface of leaf. B. Stamen. C. Calyx and pistil. D. Cross-section of ovary. E. Fruit. (Flowering shoot adapted from Hooker.)

RHODODENDRON MADDENII, *Hook. f.*

Illustrations—*Bot. Mag.*, t. 4805 (1854) ; Hook. f. *Sikkim Rhod.*, t. 18 (1851).

Habit : shrub to 8 ft. high ; bark papery ; young branchlets covered with rusty scales.

Leaves : lanceolate to oblong-lanceolate, base rather blunt, apex acute and shortly pointed, 4-5 in. long, 1-1½ in. broad ; older leaves more elliptic and 6 in. long and 2½ in. broad, dull green above and at first scaly, *completely covered below* with dense overlapping reddish-brown scales ; lateral nerves 8-10, slightly raised above, fainter beneath ; leaf-stalk ½-1 in. long.

Inflorescence : 2-4-flowered ; flower-stalks stout, ½ in. long, scaly, scales nearly contiguous.

Flowers : white with a faint flush of rose on the outside of the lobes which are external in bud.

Calyx : 5-lobed, *lobes unequal*, normally ⅙ in. long, but sometimes ⅔ in. long, scaly outside, not fringed.

Corolla : widely tubular, fleshy ; tube 1¾ in. long, *covered with scales outside* about their own diameter apart ; lobes 5, broad, with wavy margins, *scaly outside*.

Stamens : 20, as long as corolla-tube, *glabrous* ; anthers orange-yellow.

Ovary : *10-celled*, densely scaly ; style exserted, *scaly* except at apex ; stigma discoid, 5-lobed.

Capsule : about 1 in. long, thick, 10-celled.

Habitat : Sikkim and Bhutan, 5000-9000 ft.

RHODODENDRON MANIPURENSE, *Balf. f. & Watt.*

(R. MADDENII *var.* OBTUSIFOLIUM, *Hutch.*)

ILLUSTRATION—Hutchinson in *Bot. Mag.*, t. 8212 (1908).

HABIT : tree or shrub ; young shoots scaly.

LEAVES : elliptic or oblong-elliptic, rarely rounded, rounded at base and apex, mucronate, up to 7 in. long and 3 in. broad, thick, shining above, very densely scaly below, the scales contiguous or nearly so ; lateral nerves about 10 on each side of midrib ; stalks stout, up to $1\frac{1}{4}$ in. long, densely scaly.

INFLORESCENCE : 4-5-flowered ; flower-stalks $\frac{1}{3}$ in. long, scaly.

FLOWERS : large, pure white, up to 4 in. long.

CALYX : $\frac{2}{3}$ in. long, unequally 5-lobed to near base, basal portion *scaly outside.*

COROLLA : tube narrowly funnel-shaped, *scaly all over the outside* ; lobes 5, rounded, about $1\frac{1}{4}$ in. broad, scaly outside near the middle.

STAMENS : 17-20, exserted ; filaments pubescent in lower half ; anthers large.

OVARY : *12-celled*, densely scaly ; style *scaly nearly to the apex*, with large lobed stigma.

CAPSULE : $\frac{3}{4}$-$1\frac{1}{2}$ in. long, scaly, capped by persistent part of style.

HABITAT : Assam, Naga Hills, 8000-10,000 ft.

RHODODENDRON ODORIFERUM, *Hutchinson.*

ILLUSTRATION—*Gard. Chron.* 1927 : 31, fig. 16.

HABIT : shrub with stout slightly punctulate branchlets ; young shoots purplish, loosely scaly.

LEAVES : elliptic to oblanceolate, obtusely rounded at both ends or shortly narrowed at the base, up to 4 in. long and $2\frac{1}{4}$ in. broad, glabrous above, densely scaly below, the scales brown, *unequal-sized and contiguous or nearly so* ; leaf-stalks about $\frac{1}{4}$ in. long, thick.

INFLORESCENCE : *6-7-flowered* ; flower-stalks $\frac{1}{3}$-$\frac{2}{3}$ in. long, loosely scaly, with *sometimes the thin linear bracteole adnate up to the calyx and resembling a calyx-lobe.*

FLOWERS : scented, white, slightly flushed with rose outside, the tube inside tinged with green.

CALYX : an *undulate rim*, not ciliate.

COROLLA : narrowly tubular, the tube about $1\frac{1}{2}$ in. long, scaly all over the outside ; lobes 5, broadly ovate-elliptic, about $1\frac{1}{4}$ in. long, scaly near the middle outside.

STAMENS : 15, shortly exserted, *glabrous.*

OVARY : 10-11-celled, loosely scaly ; style loosely scaly nearly to the top, with a large fleshy lobulate stigma.

CAPSULE :

HABITAT : Southern Tibet, Upper Nyamsang Valley, 8000 ft.

RHODODENDRON POLYANDRUM, *Hutchinson.*

ILLUSTRATION—Hutchinson in *Notes Roy. Bot. Gard. Edinb.* 12 : p. 26 (1919).

HABIT : bush 3 ft. high.

LEAVES : *oblong* or *oblong-lanceolate*, rounded-obtuse at both ends, bluntly mucronate at apex, $2\frac{1}{4}$-3 in. long, 1-$1\frac{1}{4}$ in. broad, minutely scaly and glossy reticulate above, densely scaly below, the scales contiguous or nearly so ; lateral nerves about 6 on each side ; leaf-stalks $\frac{1}{3}$ in. long, scaly.

INFLORESCENCE : about 5-flowered ; flower-stalks unequal, $\frac{3}{4}$ in. long, scaly.

CALYX : unequally 5-lobed, much longer on the adaxial side, $\frac{1}{12}$ in. long, scaly outside.

COROLLA : $2\frac{3}{4}$ in. long, scaly all over the outside ; tube straight, $1\frac{1}{3}$ in. long ; lobes 5, broadly oblong.

STAMENS : *25, exserted* ; filaments hairy in the lower half with *flake-like* hairs ; anthers $\frac{1}{6}$ in. long.

OVARY : *12-celled*, densely scaly ; style nearly as long as corolla, *scaly its full length* ; stigma broad, lobulate.

CAPSULE :

HABITAT : Bhutan, 8500 ft.

SUBSERIES MEGACALYX

RHODODENDRON DALHOUSIAE, *Hook. f.*

ILLUSTRATION—*Bot. Mag.*, t. 4718 (1853).

HABIT : epiphyte on tree stems ; branches scaly.

LEAVES : obovate or oblanceolate, rounded to an obtuse apex, cuneate at the base, $2\frac{3}{4}$-6 in. long, 1-$2\frac{1}{4}$ in. broad, somewhat glaucous below and rather densely scaly, the scales very small and unequal in size, *about their own diameter* apart, very densely papillous between the scales ; lateral nerves about 10 pairs, prominent below but rather slender ; leaf-stalks $\frac{1}{3}$-$\frac{2}{3}$ in. long.

INFLORESCENCE : about 5-flowered ; flower-stalks $\frac{1}{3}$-$\frac{2}{3}$ in. long, *softly pubescent* and rather densely scaly.

RHODODENDRON DALHOUSIAE, *Hook. f.*

A. Typical leaf. A¹. Lower surface of same. B. Stamen. C. Calyx and pistil. D. Cross-section of ovary. E. Fruit.

FLOWERS : white, tinged with rose outside, fragrant.

CALYX : 5-lobed to near the base, about $\frac{1}{3}$ in. long ; lobes oblong or oblong-elliptic, *not ciliate.*

COROLLA : about $3\frac{1}{2}$ in. long, gradually funnel-shaped from a wide base ; tube *glabrous outside except for a few scales on the adaxial side* ; lobes 5, broad.

STAMENS : 10 ; filaments pubescent ; *anthers large,* about $\frac{1}{2}$ in. long.

OVARY : 5-celled, densely scaly ; style scaly in its lower $\frac{2}{3}$.

CAPSULE : $1\frac{3}{4}$ in. long ; *calyx persistent.*

HABITAT : Sikkim, 6000-8000 ft. ; Bhutan, 6000-7000 ft.

RHODODENDRON HEADFORTIANUM, *Hutchinson* in *Bot. Mag.* (1942), t. 9614.

Illustration—*Bot. Mag.*, t. 9614.

Habit : small plant up to 1 m. high ; one-year-old shoots loosely scaly.

Leaves : evergreen, scattered on the branchlets, narrowly oblong or oblong-lanceolate, rounded to a rather long mucro at the apex, subacute at the base, 7-12 cm. long, 2-4·5 cm. broad, margins recurved, very slightly scaly above when young, soon glabrous, glaucous and scaly below, the scales unequal-sized and 2-3 times their own diameter apart ; lateral nerves 8-10 on each side of the midrib ; stalks 1·5-2 cm. long, not grooved above.

Inflorescence : 1-flowered ; bud-scales obovate, 3 cm. long, glabrous outside, fringed towards the apex with soft white hairs, the lower having corky scars ; stalks 2 cm. long, rather densely scaly.

Calyx : 5-lobed nearly to the base ; lobes elliptic or slightly ovate-elliptic, about 1·5 cm. long and 8-9 mm. broad, with a few scales down the middle outside and on the margin.

Corolla : cream, very slightly tinged with pink outside the top of the tube, with 5 oblong chrome-yellow inverted pouches at the base ; tube funnel-shaped, 7 cm. long, densely scaly towards the base outside ; lobes 5, rounded, scarcely emarginate.

Stamens : 10, a little longer than the tube ; filaments pubescent in the lowermost third ; anthers 5 mm. long, dark brown.

Ovary : 5-celled, very densely scaly ; gradually narrowed into the style which is longer than the stamens and scaly in the lower part, with a large lobulate capitate stigma.

Capsule : 5 cm. long, scaly ; seeds broadly winged, acutely acuminate.

Habitat : South-Eastern Tibet ; Tsangpo Gorge. Assam ; Delei Valley.

RHODODENDRON LILIIFLORUM, *Léveillé.*

Illustration : Hutchinson in *Notes Roy. Bot. Gard. Edinb.* **12** : 32, fig. 4 (1919).

Leaves : oblong-lanceolate, shortly narrowed at the base, subacute at the apex, $2\frac{3}{4}$-$5\frac{1}{2}$ in. long, $\frac{3}{4}$-$1\frac{1}{2}$ in. broad, leathery, finely scaly below, the scales about *their own diameter apart*, small ; lateral nerves about 10 pairs, rather prominent below ; *leaf stalk 1 in. long*, closely scaly.

Flowers : white, scented.

Calyx : $\frac{1}{3}$ *in. long*, lobed to nearly the base *on one side only*, sparingly scaly outside.

Corolla : widely funnel-shaped ; tube $2\frac{3}{4}$ in. long, 5-lobed, *rather densely scaly outside* ; lobes slightly fringed with short hairs.

Stamens : 10, rather short ; filaments densely woolly hairy in their lower third ; *anthers large*, about $\frac{1}{3}$ in. long.

Ovary : 5-celled, scaly ; style $2\frac{1}{4}$ in. long, rather densely *scaly in the lower half* ; stigma large.

Capsule : 5-celled, with 5 rounded ribs, *curved*, acuminate, about $1\frac{3}{4}$ in. long, closely scaly, girt at the base by the *persistent striate calyx-lobes.*

Habitat : Kweichow ; Pin-Fa.

RHODODENDRON LINDLEYI, *T. Moore.*

ILLUSTRATION—Hutchinson in *Notes Roy. Bot. Gard. Edinb.* 12 : 40 (1919).

HABIT : epiphyte on trees ; branches sparingly scaly.

LEAVES : elliptic or elongate-oblong-elliptic, rounded at both ends, with a reflexed or projecting obtuse callous apex, $2\frac{1}{4}$-6 in. long, $\frac{2}{3}$-$2\frac{1}{4}$ in. broad, laxly reticulate above, glaucous and rather laxly lepidote below, scales smallish, unequal, about 2-3 times their own diameter apart, densely papillous between the scales ; lateral nerves 10-12 pairs, prominent below and wavy, crenately looped near the margin ; leaf-stalks $\frac{2}{3}$-$\frac{3}{4}$ in. long.

INFLORESCENCE : 4-6-flowered ; flower-stalks $\frac{1}{3}$-$\frac{2}{3}$ in. long, densely rusty-scaly.

FLOWERS : white, scented.

CALYX : 5-lobed to near the base, nearly $\frac{2}{3}$ in. long ; lobes broadly oblong-elliptic, finely striate, glabrous outside except for a few scales at the base, *densely fringed with soft white hairs.*

COROLLA : about 3 in. long, widely tubular, *lepidote around the base only* ; lobes 5, rounded and emarginate.

STAMENS : 10, filaments densely villous ; anthers $\frac{1}{3}$ in. long.

OVARY : 5-celled, densely scaly ; style *scaly only at the base.*

CAPSULE : 2 in. long, finely lepidote ; *calyx persistent.*

HABITAT : Sikkim, 6000-10,000 ft. Bhutan ; Manipur, 9000 ft.

For an account of this species and its confusion with *R. Dalhousiae,* see Hutchinson, l.c. (*supra*) 10.

RHODODENDRON MEGACALYX, *Balf. f. & Ward.*

ILLUSTRATION—Hutchinson in *Notes Roy. Bot. Gard. Edinb.* 12 : 32, f. 4 (1919).

HABIT : bushy tree 10-16 ft. high ; branchlets laxly scaly.

LEAVES : elliptic or obovate-elliptic, rounded at the base, rounded to a sunken tip at the apex, 4-6 in. long, $1\frac{1}{2}$-3 in. broad, glabrous above, glaucous and densely lepidote below, the scales small and sunken, about their own diameter apart ; lateral nerves about 15 pairs, very prominent below ; leaf-stalks rounded except for a shallow groove on the upper side, loosely scaly.

INFLORESCENCE : 5-flowered, very shortly racemose ; flower-stalks 1-$1\frac{1}{4}$ in. long, quite glabrous.

FLOWERS : white, with nutmeg smell.

CALYX : *about 1 in. long*, broadly bell-shaped, glabrous ; lobes 5, *broadly ovate*, not *ciliate*.

COROLLA : broadly funnel-shaped ; tube $2\frac{1}{4}$ in. long, laxly scaly on the back of and below the lobes ; lobes 5, broad.

STAMENS : 10, a little shorter than the tube ; filaments pubescent in their lower part ; anthers small.

OVARY : 5-celled, densely scaly ; style scaly towards the base.

CAPSULE : very short, $\frac{3}{4}$ in. long, surrounded by the persistent calyx.

HABITAT : North-Eastern Upper Burma, 7000-9000 ft.

RHODODENDRON NUTTALLII, *Booth.*

Illustrations—Hooker *Bot. Mag.*, t. 5146 (1859) ; Millais, *Rhod.* 218 (photo.).

Habit : shrub or tree up to 30 ft., sometimes epiphytic ; branchlets nearly glabrous.

Leaves : elliptic, rounded at both ends, shortly mucronate, 5-8 in. long, $2\frac{1}{4}$-4 in. broad, coarsely and strongly bullate-reticulate, densely scaly below, scales about $1\frac{1}{2}$-2 times their own diameter apart, unequal, laxly papillous between ; *midrib raised on the upper surface* ; lateral nerves 12-16 pairs, very prominent beneath, *repeatedly looped* and zig-zag towards the margin ; leaf-stalks $\frac{3}{4}$ in. long, sparingly scaly.

Inflorescence : about 5-flowered (sometimes more) ; flower-stalks nodding, $1\frac{1}{4}$ in. long, reaching 2 in. in fruit, scaly.

Flowers : white, suffused with yellow in the tube, lobes slightly tinged pink.

Calyx : 5-lobed nearly to the base, up to 1 in. long ; lobes oblong-elliptic, about $\frac{1}{3}$ in. broad, glabrous.

Corolla : 4 in. long or more, 5-lobed ; tube scaly mainly towards the base outside ; lobes rounded.

Stamens : 10, as long as corolla-tube ; filaments pubescent ; anthers reddish brown, $\frac{1}{3}$ in. long.

Ovary : 5-celled ; style densely scaly only towards base, with a large depressed stigma.

Capsule : $1\frac{1}{3}$ in. long, scaly.

Habitat : Bhutan, 4000-5000 ft.

RHODODENDRON RHABDOTUM, *Balf. f. & Cooper.*

ILLUSTRATION—

HABIT : tree 12 ft. high ; young branchlets densely scaly and bristly with hairs.

LEAVES : obovate-oblong-elliptic, obtuse or subacute at the base, rounded to a blunt tip, $3\frac{1}{2}$-$5\frac{1}{2}$ in. long, $1\frac{1}{4}$-2 in. broad, glaucous-green below and scaly, the *scales about 3 sizes* and always *more than their own diameter apart*, densely papillous between the scales ; lateral nerves about 9-10 pairs, prominent below ; leaf-stalks $\frac{2}{3}$ in. long, slightly scaly.

INFLORESCENCE : few-flowered ; flower-stalks $\frac{2}{3}$ in. long, densely scaly and softly hairy.

FLOWERS : cream-coloured with red lines down the back of the lobes.

CALYX : $\frac{1}{3}$ in. long, 5-lobed, scaly at the base.

COROLLA : gradually funnel-shaped, *not scaly* ; tube 3 in. long ; lobes 5, not notched.

STAMENS : 10 ; filaments woolly-hairy in their lower third ; *anthers large*, $\frac{1}{2}$ in. long.

OVARY : 5-celled, densely scaly ; *style laxly scaly in the lower half.*

CAPSULE :

HABITAT : Bhutan, Punakka, 8000 ft.

RHODODENDRON SINONUTTALLII, *Balf. f. & Forrest.*

ILLUSTRATION—

A very handsome species almost the counterpart of the Bhutan *R. Nuttallii*, but with the flower-stalks *softly pubescent* as well as scaly, as also the *calyx-lobes*, which are narrower and oblong. The capsules are also much longer, as much as $2\frac{1}{2}$ in. long, slightly curved (in *R. Nuttallii* they are straight and do not exceed $1\frac{1}{3}$ in.).

HABITAT: Tsarong, South-Eastern Tibet.

RHODODENDRON TAGGIANUM, *Hutchinson, new species.*

ILLUSTRATION—

HABIT : shrub ; branchlets rather densely glandular-scaly.

LEAVES : evenly scattered on the branchlets, oblong-lanceolate, rounded to an obtuse mucronate tip, rounded at base, 2½-4½ in. long, 1-2¼ in. broad, scaly only on the midrib above, the glands fairly dense below and small but 2-3 times their own diameter apart, fleshy ; lateral nerves about 14 pairs, distinct below ; leaf-stalks ½ in. long, not grooved on the upper side.

INFLORESCENCE : 3-flowered, umbellate ; flower-stalks ¾ in. long, densely scaly.

FLOWERS : pure white with a yellow blotch inside the base, slightly fleshy, deliciously fragrant.

CALYX : large, lobes broadly elliptic-ovate, leafy, ⅔ in. long, scaly on the margin and outside the base.

COROLLA : 3½ in. long, densely scaly at the base of the tube, otherwise not scaly ; tube very broad ; lobes 5, broad.

STAMENS : 10, as long as corolla-tube, pubescent in the lower half ; anthers ¼ in. long.

OVARY : 5-celled, densely scaly ; style as long as stamens, scaly in the lower third.

CAPSULE : straight, 2 in. long, covered with small fleshy glands, the valves keeled, seeds broadly winged.

HABITAT : North-East Upper Burma : western flank of the N'Maikha—Salween Divide, near Pan-ti-Lo, 10,000-11,000 ft., on margins of open conifer forests and amongst scrub on rocky slopes. [Type *Forrest* 26,440 (fl.) ; 27,638 fruit ; Base Camp, Seinghku Wang, 7000-8000 ft., in young fruit, *Ward* 6809.]

NOTE.—This will probably prove to be the gem of Mr. Forrest's 1925 collection.

MICRANTHUM SERIES

Leaves evergreen, oblanceolate, covered with overlapping scales below. Inflorescence a many-flowered raceme. Flowers very small. Stamens 10, glabrous. Ovary 5-celled.

A single, very distinct species with a wide range in Northern China, showing no particular affinity with any other Rhododendron.

J. H.

RHODODENDRON MICRANTHUM, *Turcz.*

Illustration—*Bot. Mag.*, t. 8198 (1908).

Habit : bush with lanky branches several feet high ; branchlets loosely scaly.

Leaves : oblanceolate, gradually narrowed to the base, obtusely mucronate, $1\frac{1}{4}$-$1\frac{3}{4}$ in. long, $\frac{1}{3}$-$\frac{1}{2}$ in. broad, very sparingly scaly above, covered with overlapping scales below, scales light brown, uniform ; leaf-stalks $\frac{1}{8}$ in. long.

Inflorescence : a terminal many-flowered raceme ; axis $\frac{3}{4}$ in. long ; flower-stalks slender, about $\frac{1}{3}$ in. long, scaly ; flower-bud-scales early deciduous.

Flowers : milky white.

Calyx : rather small, lobes linear, about $\frac{1}{16}$ in. long, ciliate.

Corolla : campanulate, $\frac{1}{4}$-$\frac{1}{3}$ in. long, scaly outside.

Stamens : 10, exserted, glabrous.

Ovary : 5-celled, scaly ; style shorter than the stamens, glabrous.

Capsule : $\frac{1}{4}$ in. long, rather loosely scaly.

Habitat : North and West China, from Western Szechuan to the Pekin district.

RHODODENDRON MICRANTHUM, *Turcz.*

A. Apex of leaf. B. Scales on lower surface. C. Enlarged scale. D. Stamen. E. Pistil. F. Fruit. (Habit figure from *Bot. Mag.*)

MOUPINENSE SERIES

General Characters :—Small shrubs usually epiphytic, with bristly branchlets. Leaves leathery, evergreen, fringed with hairs, densely scaly below. Inflorescence terminal, 1-2-flowered. Flowers white or rosy-red, fragrant. Calyx large, scaly outside. Corolla medium-sized, not scaly outside. Stamens 10, exserted, pubescent. Ovary 5-celled, scaly ; style glabrous or hairy at the base

Distribution :—Eastern Tibet and Szechuan, about 8000 ft.

A small series closely allied to the *Maddenii* and *Triflorum* series.

J. H.

KEY TO THE SPECIES

A. Flowers white or red ; flower-stalks bristly-hairy:
  B. Leaves glabrous above, about $\frac{3}{4}$ in. long, the scales below nearly contiguous . . . . **dendrocharis.**
  B. Leaves scaly above, about $\frac{1}{2}$ in. long, densely scaly below **petrocharis.**
A. Flowers white ; flower-stalks scaly ; leaves 1-1$\frac{1}{2}$ in. long, the scales below about their own diameter apart **moupinense.**

RHODODENDRON DENDROCHARIS, *Franch.*

ILLUSTRATION—

HABIT : epiphytic shrub ; branchlets very bristly especially when young, the bud-scales deciduous.

LEAVES : fringed with long hairs, elliptic, mucronate, about $\frac{3}{4}$ in. long, $\frac{1}{3}$ in. broad, glabrous above, glaucous and densely scaly below, the scales nearly contiguous ; leaf-stalks $\frac{1}{6}$ in. long, bristly.

INFLORESCENCE : terminal, 1-flowered ; flower-bud-scales early deciduous ; flower-stalks $\frac{1}{6}$ in. long, *very bristly*.

FLOWERS : *bright rosy red.*

CALYX : $\frac{1}{4}$ in. long, lobes broadly elliptic, scaly outside, fringed with long hairs.

COROLLA : broadly funnel-shaped, about $1\frac{1}{4}$ in. long, not scaly outside.

STAMENS : 10, exserted, pubescent.

OVARY : scaly ; style densely hairy at the base.

CAPSULE : $\frac{1}{2}$ in. long, laxly scaly.

HABITAT : Eastern Tibet and Szechuan, 7000-9000 ft.

RHODODENDRON MOUPINENSE, *Franch.* Flowers white.

A. Scales on lower surface of leaf. B. Stamen. C. Calyx and pistil. D. Ovary and part of calyx. (After *Bot. Mag.*)

RHODODENDRON MOUPINENSE, *Franch.*

ILLUSTRATION—*Bot. Mag.*, t. 8598 (1915).

HABIT: a small shrub, sometimes epiphytic; branchlets bristly, with early deciduous leaf-bud-scales.

LEAVES: elliptic to ovate-elliptic, rounded at each end and apiculate, 1-1½ in. long, ½-1 in. broad, thick and leathery, glabrous above, densely scaly below, scales very small and about their own diameter apart, at first ciliate on the margin; leaf-stalks ¼ in. long, bristly and scaly.

INFLORESCENCE: terminal, 1-2-flowered; flower-bud-scales persistent during flowering; flower-stalks very *short and scaly*.

FLOWERS: *white*, fragrant.

CALYX: ⅙ in. long, broadly 5-lobed, scaly and puberulous outside.

COROLLA: broadly funnel-shaped, glabrous outside, about 1½ in. long.

STAMENS: 10, scarcely exserted, pubescent in the lower part.

OVARY: scaly; style glabrous.

CAPSULE: narrowly ovoid, ⅔-¾ in. long, closely covered with small fleshy scales.

HABITAT: Eastern Tibet and Szechuan.

RHODODENDRON PETROCHARIS, *Diels.*

ILLUSTRATION—

HABIT : small shrub.

LEAVES : ovate-elliptic, mucronate, about $\frac{1}{2}$ in. long and $\frac{1}{4}$ in. broad, sparingly scaly above, densely so below, ciliate when young.

INFLORESCENCE : terminal, 1-2-flowered ; flower-bud-scales persistent.

FLOWERS : white.

CALYX : membranous, lobes lanceolate-elliptic, ciliate.

COROLLA : openly campanulate, nearly glabrous within.

STAMENS : 10, included, hairy above the base.

OVARY : scaly.

CAPSULE :

HABITAT : Szechuan, 5500 ft., on rocks.

NERIIFLORUM SERIES

This important series can be subdivided into four subseries for which the distinguishing characters are given on page 508. At first sight this assemblage under one series has a heterogeneous appearance, but analysis shows that it represents an unmistakable phyletic grouping. Three characters are of special importance: the inflorescence is never congested; the corolla is almost invariably unspotted; the ovary is usually densely hairy or hairy and glandular or very rarely entirely glandular. The other series with which the Neriiflorum series may be confused are Taliense, Thomsonii and Fortunei. The members of the Neriiflorum series which suggest affinity with Taliense are those with heavy indumentum, but the members of the latter series are at once distinguished by the dense truss, the spotted flowers and the very pointed apex of the leaf. The great majority of the members of the Thomsonii series are separable by the characteristic Thomsonii leaf with its broad outline and cordate base, by the rare occurrence of indumentum and by the non-hairy ovary. In form and consistency of corolla and in the prominent nectar-sacs there are marked resemblances between the two series. The only species likely to raise a doubt are the few—certainly referable to Neriiflorum on foliage characters—which have a densely and entirely glandular ovary. The series Fortunei with characteristic leaves and buds, with its lack of indumentum, and its non-hairy ovary is still further apart.

It is to be realised that in this series, especially in the subseries Sanguineum, there is a very confusing assemblage of plants and very good evidence of extensive hybridisation, not at the present time but at some long past period in the evolution of these species and varieties. This does not imply that the plants will not come true to type in cultivation. But this view has been arrived at in the course of a very detailed analysis of the characters which have been used to discriminate the various species one from another. In the key use has been made of those characters which are comparatively stable; other marks such as size of calyx and presence of hairs and glands are particularly unreliable. This may be best understood by the following comparison of characters. These may be arranged in pairs as

follows, though the list is not a complete one and intermediate conditions occur:—

Indumentum :	none	versus	plastered or thick.
Pedicel :	glandular	,,	hairy.
Calyx :	large	,,	small.
Corolla :	fleshy	,,	thin.
	tubular	,,	open.
	red shades	,,	whites and yellows.
Stamens :	pubescent	,,	glabrous.
Ovary :	glandular	,,	tomentose.

It is evident that many combinations of these opposed characters are possible, and in the analysis of the "species" there is abundant evidence of the distribution of these characters on Mendelian lines.

H. F. T.

KEY TO THE SUBSERIES

1. Leaves oblong-elliptic, indumentum absent; or leaves narrow, pointed, indumentum present.
   Indumentum when present loose woolly, grey to dark cinnamon, often detersile.
   Corolla very fleshy, scarlet to crimson (in *R. floccigerum* rarely yellow).
   Ovary narrow elongate, hairy, *tapered into the style*, not truncate.
   Fruit long, curved . . . . . **Neriiflorum.**

2. Leaves oblanceolate to obovate, rarely narrow in proportion to length.
   Indumentum *none or mostly thin plastered* (rarely loose and woolly), white to fawn.
   Corolla thin in sections 1, 2, 3 and 5, very fleshy in sections 4 and 6.
   Ovary short, *blunt, hairy*, rarely densely glandular.
   Fruit straight, *short, not curved* . . **Sanguineum.**

3. *Dwarf creeping or prostrate shrubs. Leaves small*, apex rounded to pointed.
   Indumentum none or evanescent.
   Corolla very fleshy, scarlet to deep crimson, rarely pink.
   Ovary short, *blunt*, densely hairy or glandular or both.
   Fruit straight or slightly curved . . . **Forrestii.**

4. Leaves *broadly obovate* with *rounded apex.*
   Indumentum *woolly* (*not plastered*), more or less *reddish-brown.*
   Corolla very fleshy, red to deep crimson, rarely yellow or white.
   Ovary short, blunt, *broad for its length, hairy* or *glandular.*
   Fruit *short, straight* . . . . **Haematodes.**

NERIIFLORUM SERIES

SUBSERIES FORRESTII

The Forrestii subseries is a small but very distinct assemblage of plants in the Neriiflorum series. Typically they are very dwarf prostrate plants but in some forms they may become suberect and reach a height of 2 ft. In contrast to other members of the series flowers appear on plants of the Forrestii subseries when the prostrate shoots are only one or two inches high. The leaf has the rounded apex characteristic of the majority of the Neriiflorum series except in *R. crastum* and *R. porphyrophyllum*, which consequently are less typical of the series. Leaf indumentum is absent or very thin and glands may be present or absent ; they are prominent on the under side of the leaf of *R. repens*. The corolla is always tubular-campanulate, not spotted, very fleshy, coloured from rich pink through scarlet to a deep crimson, and for the height of the plant the corolla is remarkably large. The ovary—like that of typical members of the Sanguineum subseries—is tomentose, tomentose and glandular, or glandular. In *R. Forrestii* it is glandular without hairs, a character which in the Sanguineum subseries finds a parallel in *R. didymum*. The character of the indumentum separates the subseries from any member of the Haematodes subseries. The curved tapering fruit of the Neriiflorum subseries differentiates that subseries, nor can the Forrestii subseries with its characteristic habit and its leaf characters be confused with any member of the Sanguineum subseries.

Outwith its own series there is a suggestion of kinship with the Thomsonii series. The suberect variety of *R. repens*—var. *chamae-Thomsonii*—recalls in appearance the smaller leaved forms of *R. Stewartianum*. This is perhaps a case of simulation rather than an index of affinity, although the suggestion of kinship to the Thomsonii series is strengthened by the glandularness of the ovary in this variety of *R. repens*. There remains always the difference in habit and size.

NERIIFLORUM SERIES

SUBSERIES FORRESTII

KEY TO THE SPECIES

A. Leaf under surface deep purple-red:
  B. Leaf more or less orbicular (more or less rounded at both ends); indumentum none . . . . **Forrestii.**
  BB. Leaf lanceolate to linear-lanceolate (more or less pointed at both ends); indumentum thin . **porphyrophyllum.**
AA. Leaf under surface green or glaucous:
  B. Leaf very broadly ovate; rounded at apex, more or less emarginate; indumentum thin in the type, more pronounced in some varieties . . **repens** and its varieties.
  BB. Leaf more or less lanceolate, oblanceolate or elliptic; apex pointed; indumentum thin but always present:
    C. Leaves always narrow, pointed; indumentum of interrupted hair tufts more or less detersile; corolla rose-pink . . . . . **erastum.**
    CC. Leaves very variable, not so narrow nor so pointed as in *R. erastum*; indumentum a thin floccose veil more or less persistent; corolla scarlet-crimson . **serpens**

RHODODENDRON ERASTUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 60.

Illustration—

Habit : a creeping undershrub a few inches high, freely rooting from the prostrate stem which is clothed for several years with persistent bud-scales ; young shoots clothed with woolly hairs.

Leaves : lamina leathery, narrow-oblong or lanceolate, 2-3 cm. long, ·5-1 cm. broad ; apex obtuse with a prominent mucro ; margin revolute ; base obtuse ; upper surface slightly rugulose with grooved midrib ; under surface pale, with an interrupted rufous tomentum of woolly hair-tufts more freely developed on the raised midrib and primary veins ; petiole ·5-1 cm. long, rufous-woolly.

Inflorescence : an umbel of 3-4 flowers (sometimes 1 or 2).

Pedicels : about 1 cm. long, densely floccose and glandular.

Calyx : saucer-shaped, about 2 mm. long, cup floccose, lobes about 1 mm. long, floccose ciliate.

Corolla : campanulate, clear begonia-pink, about 2·2 cm. long, tube fleshy with pouches at base ; lobes 5, rounded, about 7 mm. long, 1 cm. broad.

Stamens : 10, subequal, 1-1·3 cm. long ; filaments puberulous at base.

Pistil : about 1·8 cm. long, exceeding stamens, a little shorter than corolla ; ovary dome-shaped, about 3 mm. long, densely white to rufous floccose and with a few stalked glands ; style glabrous.

Capsule :

Habitat : North-Western Yunnan ; Mekong—Salween Divide. On stony alpine meadows at 14,000 ft. altitude.

This is a very narrow-leaved member of the subseries. The indumentum is of a flocculent type and very detersile, the leaf sometimes becoming quite bare. The colour of the corolla is remarkable in the subseries, being of a clear begonia-pink.

RHODODENDRON FORRESTII, *Balf. f. MS.* (descript. *Diels*) in *Notes R.B.G. Edin.*, vol. 5 (1912), 211.

Illustration—*Bot. Mag.*, vol. 153 (1927), t. 9186.

Habit : a prostrate woody shrub of 6 to 18 inches, climbing over moist boulders and rooting freely from the stems, which are clad for several years with persistent scale leaves ; branchlets a year old about 2 mm. in diameter, glandular.

Leaves : in typical forms small, persisting several years ; lamina rigid, broadly obovate to orbicular from 1 cm. or less long to as much as 3 cm. long, ·5-2 cm. broad ; apex rounded, often emarginate with a short blunt mucro ; base obtuse to rounded ; upper surface dark green, midrib, primary veins and veinlets more or less deeply impressed giving a semi-bullate surface ; under surface deep purple-red, midrib and primary veins raised, the venation punctulate with glands ; petiole ·5-1 cm. long, floccose and glandular.

Inflorescence : flowers solitary, terminal with base of pedicel encased in persisting bracts.

Pedicels : about 1 cm. long, glandular.

Calyx : very short with 5 fleshy rounded lobes, glandular and gland-fringed.

Corolla : tubular-campanulate, about 3 cm. long, deep crimson, with 5 fleshy pouched nectaries at the base.

Stamens : 10, almost equal, the longest very slightly shorter than the style ; filaments glabrous.

Pistil : about 2 cm. long ; ovary 3-4 mm. long, conoid, densely glandular ; style glabrous ; stigma small, lobulate.

Capsule : oblong, truncate, about 1 cm. long, 4 mm. broad, 5-ribbed, glandular.

Habitat : North-Western Yunnan ; Sela Pass ; South-Eastern Tibet ; Mekong—Salween Divide. On alpine meadows and moorland at 13,000-14,000 ft. altitude.

This species and *R. repens* are two very desirable dwarf alpine members of the genus. They are very closely allied and are distinguished chiefly by the colour of the under surface of the leaf, purple in *R. Forrestii* and green in *R. repens*. *R. Forrestii* has always a very dark crimson flower, while *R. repens* may be more properly described as scarlet. The colour character of the leaf holds consistently on the specimens collected in the field. It has still to be determined how far this distinction will persist in cultivation. *R. Forrestii* varies little except to forms with larger leaves than the typical plant.

RHODODENDRON PORPHYROPHYLLUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 108.

Illustration—

Habit : a creeping woody undershrub about 2 ft. high, rooting freely, the young stems woolly tomentose ; scale leaves of foliage buds persistent for several years, old stems thick and gnarled.

Leaves : lamina thick leathery, oblanceolate, lanceolate or oblong-oval, 2-5 cm. long, ·7-1·3 cm. broad ; apex obtuse ; margin revolute ; base tapered to narrow wings on petiole ; upper surface mat, glabrescent ; under surface purplish, midrib raised, whole surface covered with a thin loose indumentum of brownish, detersile hairs through which the purplish epidermis shows ; petiole woolly tomentose, about ·5 cm. long.

Inflorescence : flowers solitary (or few).

Pedicels : about 1·5 cm. long, densely floccose.

Calyx : small, fleshy, about 1·5 mm. long, lobes flock-fringed.

Corolla : tubular-campanulate, deep rose, about 4 cm. long, fleshy with 5 nectar pouches at base ; lobes rounded, about 1·3 cm. long, 1·5 cm. broad.

Stamens : unknown.

Pistil : shorter than corolla ; ovary conoid, 4·5 mm. long, tomentose with fasciate hairs ; style glabrous.

Capsule :

Habitat : South-Eastern Tibet and North-Western Yunnan ; Mekong—Salween Divide. On open stony alpine pastures and ledges of cliffs at 13,000 ft. altitude.

This bears somewhat the same relationship to *R. Forrestii* that *R. erastum* bears to *R. repens*. The leaves are elongated and pointed but have the same purple under surface as is seen in *R. Forrestii*. In its habit and shape of leaf it recalls *R. Roxieanum* and its allies but differs widely from them in indumentum and in colour, texture, and absence of spotting of the corolla.

RHODODENDRON REPENS, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 115.

Illustration—*Millais Rhodos.*, 2nd Series (1924), 244.

Habit : a creeping undershrub of 6 inches to 1 foot.

Leaves : lamina obovate-oblong or elliptic, 8 mm.-3 cm. long, 6 mm.-2 cm. broad ; apex rounded ; base obtuse ; upper surface dark green, semi-bullate, midrib grooved, primary veins about 8 on each side impressed ; under surface pale green, with short glands and few hair-flocks on the midrib and primary veins ; petiole about 5 mm. long, floccose and glandular.

Inflorescence : flowers solitary (rarely 2), with base of pedicel surrounded by persisting bracts.

Pedicels : about 2 cm. long, clad with short glands and setose hairs.

Calyx : about 3 mm. long, divided to near base into 5 gland-fringed lobes.

Corolla : tubular-campanulate, crimson, about 3·8 cm. long ; lobes 5, about 8 mm. long, 1·5 cm. broad, emarginate.

Stamens : 10, 1·8-2 cm. long ; filaments glabrous.

Pistil : about 2 cm. long ; ovary 4 mm. long, conoid, densely tomentose and more or less glandular ; style glabrous.

Capsule : about 2 cm. long, 5 mm. broad, almost straight.

Habitat : North-Western Yunnan and South-Eastern Tibet. On moss-clad boulders and moist stony pastures at 12,000-14,000 ft. altitude.

This plant, now well known in cultivation, has its nearest ally in *R. Forrestii*. *R. repens* in pedicel and ovary is the less glandular species. It is a variable plant and has a marked extension westwards from Yunnan as far as the Eastern Himalayan Watershed of the Brahmaputra. The chief varieties are :—

var. *chamaedoron*. Leaf like the type but indumentum of *R. serpens* ; stamens puberulous. South-Eastern Tibet ; Salween—Kiu chiang Divide.

var. *chamaethauma*. A taller plant with larger leaves and 4-5 carmine flowers in the truss. South-Eastern Tibet ; Doshong La.

var. *chamae-Thomsonii*. Leaf larger, glaucous above ; ovary very glandular. South-Eastern Tibet ; Salween—Kiu chiang Divide.

RHODODENDRON SERPENS, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 135.

Illustration—

Habit : a woody creeping shrub, the ascending branches rising a few inches or as much as 1½ ft., rooting freely from the prostrate stems ; perulae persisting on the branches for several years.

Leaves : lamina oval to oblong-obovate, 1·5-5 cm. long, 1-2·5 cm. broad ; apex obtuse ; base obtuse and prolonged as narrow wings on petiole ; upper surface mat green, semi-rugulose, midrib and primary veins and veinlets all deeply impressed ; under surface a paler green veiled by a thin floccose indumentum (not concealing the epidermal reticulations), mixed with small glands, midrib prominently raised ; petiole about 5 mm. long, glabrescent or sparse-floccose and glandular.

Inflorescence : a terminal umbel of 2 flowers (rarely 1 or 3), inner bracts persisting around the base of pedicels during flowering.

Pedicels : 1-1·5 cm. long, erect, glandular and floccose.

Calyx : small fleshy, sparsely hairy, about 1·5 mm. long ; lobes 5, rounded, ciliate.

Corolla : tubular-campanulate, about 3 cm. long, deep or paler rose, the base fleshy ; lobes 5, rounded emarginate, 1 cm. long, 1·5 cm. broad.

Stamens : 10, sub-equal, about 2 cm. long ; filaments puberulous at base.

Pistil : 2·3 cm. long, slightly longer than the stamens ; ovary conoid, clad with fasciate hairs, sometimes mixed with glands ; style glabrous.

Capsule :

Habitat : South-Eastern Tibet ; Mekong—Salween Divide. Open rocky alpine meadows at 14,000 ft. altitude.

This species has leaves somewhat intermediate between those of *R. repens* and *R. erastum*. Its affinity, however, is entirely with the latter species, from which in some forms it can scarcely be distinguished. As a rule its leaves are broader and less pointed than in *R. erastum*.

NERIIFLORUM SERIES

SUBSERIES HAEMATODES

This subseries is the most distinct of the series Neriiflorum. The well-developed thick indumentum is the chief mark. This is thin only in certain forms of *R. chaetomallum*. The only species in the series apart from the subseries Haematodes which have a thick indumentum are:—(1) *R. citriniflorum* and *R. horaeum*, which are kept outside the subseries by other characters; (2) *R. sperabile* and its allies with elongate and very pointed leaves. In this subseries are found the largest leaves for the series Neriiflorum, and they are almost invariably broad at the apex and rounded. As regards the fleshy corolla, usually coloured from red to deep crimson, the species are in close relation to the other subseries with the exception of the four sections of the subseries Sanguineum, which have thinner corollas. *R. chionanthum* is an exceptional member of the subseries with white flowers. The ovary is short and truncate, nearly always tomentose or more rarely glandular.

R. mallotum is an outstanding species with its thick rugulose leaves recalling in appearance *R. Falconeri*. The species associated with *R. pocophorum* (section BB of the following key) are characterised by large compact inflorescences and large flowers on short pedicels. The members of this section of the subseries resemble some of the species of the subseries Thomsonii, but the character of the indumentum readily distinguishes them from that subseries. From the series Taliense this subseries is distinguished by the leaf shape with rounded apex.

NERIIFLORUM SERIES

SUBSERIES HAEMATODES

KEY TO THE SPECIES

A. Leaf more or less smooth above, flowers red to crimson, rarely yellowish :
  B. Petioles densely woolly-tomentose to bristly :
    C. Shoots woolly-tomentose ; calyx small (typically) **haematodes.**
    CC. Shoots woolly-tomentose ; calyx large cupular **catacosmum.**
    CCC. Shoots very bristly ; calyx large or small **chaetomallum.**
  BB. Petioles more or less densely glandular or subglabrous :
    C. Indumentum continuous ; petioles very glandular **pocophorum.**
    CC. Indumentum patchy interrupted ; petioles very glandular **hemidartum.**
    CCC. Indumentum continuous ; petioles subglabrous **coelicum.**
AA. Leaf small, slightly rugulose ; flowers white **chionanthum.**
AAA. Leaf large, markedly rugulose above ; flowers red to crimson . . . . . **mallotum.**

RHODODENDRON CATACOSMUM, *Balf. f. in MS.* (descript. *Tagg*) in *Notes R.B.G. Edin.*, vol. 15 (1927), 307.

Illustration—

Habit : a shrub of 6-9 ft., branches one year old below inflorescences, 7 mm. in diameter, clad with a brownish to white compact wool, eglandular ; yearly growth short.

Leaves : lamina leathery, obovate, 6-11 cm. long, 3-5 cm. broad ; apex rounded, mucro short ; base obtuse ; upper surface minutely rugulose, glabrous or with vestiges of tomentum on grooved midrib, primary veins about 10 on each side slightly grooved ; under surface pale cinnamon, clad with a thick woolly indumentum, midrib raised, primary veins concealed ; petiole stout, 1-1·5 cm. long, grooved, woolly-like young stems.

Inflorescence : a racemose umbel of about 9 flowers, laxly disposed ; rhachis 1·5 cm. long, fawn tomentose.

Pedicels : 2·5 cm. long, cinnamon, woolly-tomentose, eglandular.

Calyx : a large petaloid cup as much as 2 cm. long, irregularly lobed ; lobes 5, unequal, truncate, broadly rounded or obtuse, sparsely clothed at base and fringed at margins with branched hairs.

Corolla : broadly campanulate, crimson-rose, 4-4·5 cm. long, fleshy at base with 5 pouched nectaries ; lobes 5, rounded, emarginate, 1·3 cm. long, 2 cm. broad.

Stamens : 10-12, unequal, 1·5-2·5 cm. long ; filaments widened at base and there puberulous.

Pistil : 3·5 cm. long ; ovary oblong, truncate, 8 mm. long, densely fulvous-tomentose, eglandular ; style glabrous ; stigma discoid.

Capsule : broadly oblong, straight, 2 cm. long, 1 cm. broad, fulvous tomentose.

Habitat : South-Eastern Tibet ; Salween—Kiu chiang Divide. Amongst scrub in alpine side valleys, at 13,000-14,000 ft. altitude.

This is a magnificent member of the subseries. It is most closely allied to *R. haematodes* itself, but differs widely in the larger and more rounded leaves, in the broader more campanulate flower and in the huge calyx, usually forming a distinct cup. The shoots of this species are very thick as compared with *R. haematodes* and *R. chaetomallum*. Its inflorescence is remarkably loose with long pedicels, thus differing widely from that of *R. pocophorum* and its allies.

RHODODENDRON BEANIANUM, *Cowan* in *New Flora and Silva*, vol. 10 (1938), 245.

Illustration—*New Flora and Silva*, vol. 10 (1938), f. 80.

Habit : a small bush of 8-10 ft. high with ascending branches ; young shoots reddish-brown clad with floccose hairs and setose glands, about 4 mm. in diameter below the inflorescence.

Leaves : thinly leathery, lamina oblong or elliptic-oblong or oblong-obovate, 7-9 cm. long, 3-4 cm. broad ; apex rounded, mucronate ; base obtuse or rounded ; upper surface dark green, shining, rugulose, almost glabrous ; under surface clad with a persistent more or less dense woolly, chestnut to cinnamon, indumentum ; midrib prominent, glabrescent ; primary veins, about 10 on each side ; petiole about 2 cm. long, reddish tomentose above.

Inflorescence : a terminal umbel of 6-10 flowers.

Pedicels : about 2 cm. long, expanded under the calyx cup.

Calyx : cup-shaped, fleshy, irregularly divided into lobes ; lobes deciduous.

Corolla : tubular-campanulate, about 3 cm. long, carmine to bright blood red with 5 black nectar pouches at base ; lobes 5, rounded notched, 1 cm. long, 1·8 cm. broad.

Stamens : 10, unequal, 2·4-2·8 cm. long ; filaments glabrous.

Pistil : about 3 cm. long ; ovary conoid, 5 mm. long, faintly grooved, densely clad with branched hairs ; style as long as the corolla, hairy at the base.

Capsule :

Habitat : Tibet and Burma, Seinghku and Delei Valleys. Alt. 9,000-11,000 ft.

Rh. Beanianum is related to *Rh. haematodes* but easily distinguished by the bristles on its stems and by its oblong to elliptic-oblong, shining, rugulose leaves.

RHODODENDRON CHAETOMALLUM, *Balf. f. & Forrest.*

The following are varieties :—

var. **glaucescens**, *Tagg. & Forrest.*

A variety characterised by a glaucous wax-like bloom on the leaf upper surface recalling the leaf appearance of some of the members of the Thomsonii series. A shrub of 5 ft. with deep rich crimson flowers.

HABITAT : North-Eastern Upper Burma ; western flank of the Salween—Kiu chiang Divide at an altitude of 13,000 ft. On rocky slopes in side valleys.

var. **hemigymnum**, *Tagg & Forrest.*

In this variety the dense woolly indumentum of the leaf under side characteristic of the type is replaced by a thin veiling indumentum which does not conceal entirely the leaf epidermis. A shrub of 5 ft. with flowers a rich bright crimson. The young twigs, petioles and pedicels are clothed with twisted branched hairs as in the type, and the ovary also is densely tomentose. The stamens glabrous in the type are here puberulous, and the flower is larger with a pronounced cupular calyx. The foliage recalls some of the members of the Thomsonii series, but the tomentose ovary is of the *R. chaetomallum* type.

HABITAT : South - Eastern Tibet ; Salween — Kiu chiang Divide. In mixed scrub at 12,000 ft.

var. **xanthanthum**, *Tagg & Forrest.*

Distinguished from the type by the larger flowers, creamy-yellow flushed more or less a rose-pink, especially on the margins. The large cupular calyx, recalling that of *R. catacosmum*, is a notable character. A shrub of 2-4 ft., of the habit of the type.

HABITAT : South - Eastern Tibet ; Salween — Kiu chiang Divide. On alpine moorland among dwarf rhododendrons and scrub at 14,000 ft.

RHODODENDRON CHIONANTHUM, *Tagg & Forrest* in *Notes R.B.G. Edin.*, vol. 15 (1927), 309.

Illustration—

Habit : a shrub of 3 ft. ; shoots one year old 3 mm. in diameter, strigose tomentose, bud-scales more or less persistent.

Leaves : closely clustered at the ends of the shoots ; lamina obovate to shortly and broadly oblanceolate, about 6 cm. long ; 2·5 cm. broad ; apex broadly obtuse ; base obtuse or cuneate ; upper surface rugulose, midrib grooved, primary veins 7-9 on each side, strongly impressed ; under surface clothed with a tawny shredded and patchy woolly tomentum, midrib and lateral veins prominently raised ; petiole very short widened to a broad insertion and slightly ridged by decurrent lamina.

Inflorescence : a lax umbel of about 6 flowers ; rhachis short.

Pedicels : 1·5-2 cm. long, clothed with tawny branched hairs.

Calyx : 5-9 mm. long, deeply cut into oblong-oval rounded unequal lobes, the margins of which are minutely toothed and fringed with branched hairs.

Corolla : campanulate, white, 3·5 cm. long ; lobes 5, rounded, shallowly emarginate, 1·3 cm. long, 1·5-2 cm. broad.

Stamens : 10, unequal, 1·3-2·3 cm. long ; filaments glabrous.

Pistil : 3·3 cm. long ; ovary 5 mm. long, fulvous tomentose with long twisted branched hairs ; style glabrous.

Capsule :

Habitat : North-Eastern Upper Burma ; western flank of the Salween—Kiu chiang Divide. On alpine meadows and rocky slopes, at 13,000-14,000 ft. altitude.

This species is readily distinguished from all members of the subseries Haematodes by the white corolla. Its flowers are not quite so fleshy as those of other members of the subseries. It is consequently rather an anomalous member, but the character of its indumentum and the tomentose ovary suggests affinity with *R. chaetomallum*.

RHODODENDRON COELICUM, *Balf. f. & Farrer* in *Notes R.B.G. Edin.*, vol. 13 (1922), 250.

Illustration—

Habit: a thin, low bush or rarely a small stout tree; shoots stout, glabrous, those one year old below inflorescences about 5 mm. diameter.

Leaves: lamina leathery, obovate, about 7 cm. long, 4 cm. broad; apex rounded; base obtuse; upper surface smooth, at maturity glabrous; under surface clad with a thick cinnamon-coloured tomentum of branched hairs below which are short clavate glands; midrib raised and glabrescent, primary veins about 8 on each side concealed by indumentum; petiole about 1 cm. long, subglabrous.

Inflorescence: a compact rounded umbel of about 12-15 flowers; rhachis very short, tomentose.

Pedicels: about 1 cm. long, densely glandular.

Calyx: 6 mm. long, fleshy, cup-shaped, with 5 irregular lobes.

Corolla: funnel-campanulate, fleshy, 4 cm. long, bright scarlet with 5 pouches at base of tube; lobes 5, emarginate, 1 cm. long, 2 cm. broad.

Stamens: 10, unequal, 2-3·5 cm. long; filaments glabrous.

Pistil: almost equalling corolla; ovary conoid, 5 mm. long, truncate, clad with short red glands and branched hairs; style glabrous; stigma small.

Capsule:

Habitat: North-Eastern Upper Burma; Chawchi Pass. On precipices or making tangle in the cane brake, at 11,000 ft. altitude.

R. coelicum is a close ally of *R. pocophorum*. It has the same dense inflorescence but it is much less glandular. The petioles and midribs are subglabrous, showing occasionally a few glands but none of the tomentum of *R. haematodes* and *R. catacosmum*.

RHODODENDRON HAEMATODES, *Franch.* in *Bull. Soc. Bot. France*, vol. 33 (1886), 232.

ILLUSTRATIONS—*Millais Rhododendrons*, 2nd Series (1924), 152; *Bot. Mag.*, vol. 153 (1927), t. 9165.

HABIT: a dwarf shrub or bush as much as 10 ft. high; young shoots woolly-tomentose, eglandular; perulae more or less persistent.

LEAVES: lamina oblong to obovate, 4·5-8 cm. long, 2-3 cm. broad; apex obtuse to rounded, shortly mucronate; base cuneate to semi-rounded; upper surface dark green, glabrous, very slightly rugulose, midrib grooved, lateral veins 7-10 on each side, impressed; under surface densely rufous-woolly-tomentose, midrib raised, primary veins concealed by indumentum; petiole 1 cm. long, grooved, woolly-tomentose.

INFLORESCENCE: an umbel of 6-8 flowers; rhachis very short, woolly-tomentose.

PEDICELS: 2 cm. long, woolly to bristly.

CALYX: 3-8 mm. long, commonly red; lobes unequal, rounded.

COROLLA: fleshy, tubular-campanulate, crimson, 4·5-5 cm. long, tube with 5 pouches at base; lobes 5-6, 1·3 cm. long, 2·3 cm. broad, rounded, emarginate.

STAMENS: 10-12, unequal, 1·5-2·7 cm. long; filaments glabrous or slightly puberulous.

PISTIL: about 3 cm. long, equalling or exceeding corolla-tube; ovary short, truncate, densely whitish- or rufous-tomentose; style glabrous or sometimes floccose at base.

CAPSULE:

HABITAT: Yunnan; vicinity of Tali-fu. On rocky open situations on alpine meadows, at 11,000-12,000 ft. altitude.

The typical *R. haematodes* is confined to the Tali Range. The closely allied species *R. chaetomallum* may be regarded as its extension north-westwards, with an intervening alpine area of some 140 miles inside which neither has been reported. As known in cultivation it is a small spreading bush, but in its native habitat it attains a maximum of 10 ft. *R. chaetomallum* differs in the strigillose and not woolly shoots, and in its very variable calyx which is sometimes quite large. Franchet, however, describes from the Tali Range two varieties of *R. haematodes* with large calyx, var. *calycinum* and var. *hypoleucum*. The former is obviously *R. haematodes*, but with a largish calyx. The second variety with a whitish indumentum is not known to the writer.

RHODODENDRON HEMIDARTUM, *Balf. f. MS.* (descript. *Tagg*) in *Notes R.B.G. Edin.*, vol. 15 (1927), 314.

Illustration—

Habit : a shrub about 4 ft. high, branches one year old about 5 mm. in diameter, clothed with shaggy gland-tipped hairs.

Leaves : lamina thick, leathery, oblong to obovate, 10 cm. long, 3·5 cm. broad ; apex rounded or broadly obtuse ; base slightly auricled ; upper surface green with a glaucous bloom, glabrous or with vestiges of a juvenile tomentum ; under surface clothed with a tawny indumentum of freely branched hairs, disposed in shreds and patches, and with minute glands sparsely scattered over the leaf under surface ; petiole slightly grooved, about 1 cm. long, bristly glandular.

Inflorescence : a compact umbel of about 10 flowers.

Pedicels : stout, thickened below the calyx, 1-1·3 cm. long, glabrous.

Calyx : about 7 mm. long, glabrous ; lobes 5, unequal, rounded to obtuse.

Corolla : funnel-campanulate, deep rich crimson without markings, 4·5 cm. long ; lobes 5, broadly rounded, emarginate, 1 cm. long, 1·7 cm. broad.

Stamens : 10, unequal, 2·2-3·3 cm. long ; filaments glabrous.

Pistil : 4·3 cm. long ; ovary oblong, truncate, 5 mm. long, densely glandular ; style glabrous.

Capsule : short, woody, truncate, cylindric, deeply grooved, 1·3 cm. long, 7 mm. broad.

Habitat : South-Eastern Tibet ; Salween—Kiu chiang Divide. On rocky alpine meadows amongst rhododendron scrub, at 13,000-14,000 ft. altitude.

This is a close ally of *R. pocophorum*, with which it agrees in the character of its inflorescence, corolla, calyx and fruit. It differs in the peculiar nature of its indumentum. As its name indicates—" half-flayed "—the indumentum shows irregularity in development, as if the growing leaf had ruptured it in various places revealing bare areas. It differs also in the glabrous pedicels and somewhat smaller flower. Like *R. pocophorum*, the twigs and leaf-petioles are very glandular.

RHODODENDRON MALLOTUM, *Balf. f. & Ward* in *Notes R.B.G. Edin.*, vol. 10 (1917), 118.

(R. AEMULORUM, *Balf. f.*)

ILLUSTRATION—

HABIT : a shrub or small tree about 12 ft. high ; branches stout, those a year old 6-8 mm. in diameter, clad with a grey or cinnamon-grey indumentum.

LEAVES : lamina very thick, stiff, obovate, 7-13 cm. long, 3·5-7 cm. broad ; apex rounded, truncate or retuse ; base obtuse ; upper surface dark green, rough rugulose, glabrous at maturity ; midrib raised at base, grooved upwards, primary veins about 12 on each side deeply grooved ; under surface cinnamon-brown with a dense woolly tomentum ; midrib prominent and like the primary veins covered by tomentum ; petiole stout, 2·5 cm. long, 5 mm. in diameter, clad like the stem.

INFLORESCENCE : a terminal compact umbel of about 14 flowers ; rhachis 1 cm. long, densely woolly.

PEDICELS : stout, 1·3 cm. long, densely woolly.

CALYX : obsolete, with 5 minute woolly teeth.

COROLLA : tubular-campanulate, 4 cm. long, somewhat oblique, fleshy, dark crimson.

STAMENS : 10, unequal, shorter than corolla, 2-3 cm. long ; filaments glabrous.

PISTIL : 3·5 cm. long, shorter than corolla ; ovary conoid, 7 mm. long, truncate, woolly ; style glabrous.

CAPSULE : short, ovoid to broadly oblong, about 1 cm. long, 6 mm. broad, densely tawny woolly.

HABITAT : Western Yunnan ; eastern flank of N'-Maikha—Salween Divide ; North-Eastern Upper Burma ; Hpimaw Pass. On open rocky slopes and margins of thickets, at 10,000-11,000 ft. altitude.

This is a much branched tree from 6-15 ft. characterised by the very thick leaves with markedly rugose upper surface and by the richly coloured and densely woolly indumentum of the leaf under side. The petioles are stout, short and densely woolly. *R. mallotum* was described on imperfect material. Forrest subsequently obtained fine flowering specimens which received the name *R. aemulorum*. From seed also obtained by Forrest the plant is now in cultivation. There is little doubt but that they are the same.

RHODODENDRON POCOPHORUM, *Balf. f. MS.* (descript. *Tagg*) in *Notes R.B.G. Edin.*, vol. 15 (1927), 316.

Illustration—

Habit : a shrub of 4-10 ft. ; branches a year old about 4 mm. in diameter, setulose-glandular.

Leaves : lamina thick, leathery, oblong to oblong-obovate, 10-15 cm. long, 4-6 cm. broad ; apex rounded with conspicuous mucro ; base gradually tapered, obtuse ; upper surface often glaucous with a wax bloom, at maturity glabrous ; under surface with a thick alveolate fulvous-brown indumentum ; midrib grooved above, raised below ; primary veins 12-14 on each side, impressed above, concealed on under surface by indumentum ; petiole 1-1·5 cm. long, grooved, clad with setulose glands and branched hairs.

Inflorescence : a compact rounded umbel of 15-20 flowers ; rhachis 5 mm. long, fulvous-tomentose.

Pedicels : 1 cm. long, densely glandular and sparingly pilose.

Calyx : about 1 cm. long, split into irregular unequal lobes, fringed with stalked glands.

Corolla : funnel-campanulate, 5 cm. long, fleshy, crimson, sometimes faintly spotted ; lobes 5, deeply emarginate, 1-1·3 cm. long, 2·3 cm. broad.

Stamens : 10, unequal, 2·5-3·5 cm. long ; filaments glabrous.

Pistil : 3·5-4 cm. long ; ovary oblong, 7 mm. long, densely clad with short-stalked clavate glands ; style glabrous.

Capsule : broadly oblong, densely glandular, 1·5 cm. long, 8 mm. broad.

Habitat : South-Eastern Tibet ; Salween—Kiu chiang Divide. On open rocky alpine slopes amongst mixed scrub, at 12,000-15,000 ft. altitude.

This may be regarded as a parallel plant to *R. catacosmum*, but it is distinctly glandular. It differs moreover in the larger, more elongated leaves, in the dense inflorescence with short pedicels which are markedly glandular, and in the smaller and more irregularly cut calyx. Its nearest ally is *R. coelicum*, which has glabrous petioles and tomentose as well as glandular ovary.

NERIIFLORUM SERIES

SUBSERIES NERIIFLORUM

This subseries is composed of a varied group of species which, however, have evident marks of close relationship. As will be seen from the key which follows, the species can be divided into two readily recognisable sets.

The first shows no indumentum or traces only on the midrib, and consists of *R. neriiflorum* and a number of subspecies centring around that species. The other set is characterised by the presence of a definite indumentum recalling that of the subseries Haematodes, but with a very different leaf shape. The indumentum is often detersile, as in *R. floccigerum*. In this subseries indumentum is usually associated with narrow and pointed leaves, whereas in the Haematodes subseries the leaves are more or less rounded at the apex. The corolla is always fleshy and almost invariably scarlet to deep crimson. Characteristic features are a narrow elongate ovary tapering gradually into the style and a relatively long curved fruit.

In those species which have no indumentum—*R. neriiflorum* and its variants—the leaf is usually of an evenly oblong-elliptic form, unlike anything else in the Neriiflorum series.

The species of this subseries are not likely to be confused with species outside the Neriiflorum series as a whole, but in case of doubt the following points should be noted. The series Fortunei and the series Thomsonii have quite different leaves and the ovary is never densely covered with a mat of hairs. The series Irroratum and the series Taliense have usually a dense truss and always many flowers to the truss, and these are commonly heavily spotted. In the subseries Neriiflorum the flowers are unspotted.

The foliage-buds of the Neriiflorum subseries are very characteristic, the outer scales being narrow and sharply pointed.

NERIIFLORUM SERIES

SUBSERIES NERIIFLORUM

KEY TO THE SPECIES

A. No indumentum or a mere trace on midrib. . **neriiflorum.**
Sub-species of *R. neriiflorum*:—
agetum. **phaedropum.**
euchaites. **phoenicodum.**

AA. Indumentum well developed, often more or less detersile :
B. Young shoots setulose-glandular :
C. Leaves oblanceolate.
Indumentum dense, bistrate.
Epidermis epapillate . . . . . **euchroum.**
CC. Leaves elliptic-lanceolate.
Indumentum dense, unistrate.
Epidermis waxy-papillate . . . . **sperabile.**
BB. Young shoots floccose-tomentose, eglandular :
C. Leaves oblong-lanceolate.
Indumentum dense bistrate.
Epidermis epapillate . . . . **Albertsenianum.**
CC. Leaves oblong-oblanceolate.
Indumentum thin, patchy, unistrate.
Epidermis hardly papillate . . . **sperabiloides.**
CCC. Leaves oblong-elliptic, pointed, broadest at middle.
Indumentum dense unistrate, often detersile.
Epidermis papillate . . . . **floccigerum.**

RHODODENDRON ALBERTSENIANUM, *G. Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 21.

Illustration—

Habit: a shrub of 4-7 ft. with stiff straight branches, those one year old about 3 mm. in diameter, grey-white, with a thin indumentum or glabrescent, eglandular.

Leaves: lamina narrow-oblong or sub-lanceolate, 6-9·5 cm. long, 1·5-2·5 cm. broad; apex obtuse; base obtuse; upper surface glabrescent with vestiges of juvenile tomentum, midrib grooved, primary veins 12-15 on each side slightly grooved; under surface clad with a bistrate buff indumentum with a loose woolly surface, the upper stratum more or less detersile, epidermis epapillate, midrib prominent, primary veins obscure; petiole about 1 cm. long, glabrescent like the stems.

Inflorescence: an umbel of 5-6 flowers; rhachis rufous-floccose.

Pedicels: 1-1·8 cm. long, sparingly rufous-floccose, eglandular.

Calyx: fleshy, cup-like, about 4 mm. long; lobes 5, short, rounded.

Corolla: campanulate, bright crimson-rose without markings, about 3 cm. long; lobes 5, rounded, crenulate, about 1·7 cm. long, 2·2 cm. broad.

Stamens: 10, unequal, 1·5-2·3 cm. long; filaments glabrous.

Pistil: about equalling corolla; ovary about 5 mm. long, conoid, densely tomentose with fasciate hairs; style glabrous; stigma lobed and discoid.

Capsule:

Habitat: Western Yunnan; Mekong—Salween Divide. In open forests at 10,000 ft. altitude.

This species recalls in its general appearance some of the members of the Taliense series such as *R. russotinctum*, but the flower characters are those of the tomentose section of the Neriiflorum subseries. The fleshy, unspotted corolla pouched at the base, the conoid tapering ovary and the stamens clustered around the style are essentially features of the subseries. From *R. euchroum*, which it resembles in its indumentum and the absence of epidermal papillae, it is distinguished by the leaf shape, the flower colour and the absence of glands on shoots, pedicels and ovary.

RHODODENDRON EUCHROUM, *Balf. f. & Ward* in *Notes R.B.G. Edin.*, vol. 9 (1916), 288.

Illustration—

Habit : a small spreading procumbent shrub of 1½-2 ft. ; branches a year old about 2 mm. in diameter, clad with setose glands and white floccose hairs.

Leaves : lamina oblanceolate, 3-7 cm. long, 1-2·5 cm. broad ; apex acute to shortly acuminate ; base tapered ; upper surface glabrous (or here and there vestiges of a juvenile tomentum), semi-bullate, midrib deeply grooved, primary veins about 7 on each side impressed ; under surface rusty-fawn, clad with a dense bistrate indumentum with a spongy-woolly surface, midrib prominent, primary veins obscure, epidermis epapillate ; petiole about 1 cm. long, more or less floccose and glandular.

Inflorescence : an umbel of 4-5 flowers, laxly disposed ; rhachis glandular-tomentose.

Pedicel : about 1 cm. long, glandular and floccose.

Calyx : small, lobes 5, densely tomentose and glandular.

Corolla : fleshy, bright brick-red, tubular-campanulate, about 3 cm. long, with 5 pouches at the base ; lobes 5, rounded, 1·2 cm. long, 1 cm. broad.

Stamens : 10, unequal, the longest slightly shorter than the corolla, 1·8-2·5 cm. long, whitish pubescent at the base.

Pistil : about 2·8 cm. long ; ovary narrow, 5 mm. long, densely tomentose and glandular ; style almost equalling corolla, glabrous or slightly floccose at base.

Capsule :

Habitat : Eastern Upper Burma ; Nmai Divide. In damp shady situations under bamboos, at 10,000 ft. altitude.

This is an imperfectly known plant. No one has found it since Ward secured it in Upper Burma. It is distinguished from *R. sperabile* and *R. sperabiloides* by the oblanceolate leaf with two layers of persistent indumentum. From *R. Albertsenianum* it may be distinguished by its gland-bristly shoots.

RHODODENDRON FLOCCIGERUM, *Franch.* in *Journ. de Bot.*, vol. 12 (1898), 259.

Illustration—

Habit : a shrub of 3-5 ft. with thin, twiggy branches ; shoots one year old floccose with branched hairs.

Leaves : lamina narrowly oblong, oblong-elliptic to semi-lanceolate, 5-12 cm. long, 1-2 cm. broad ; apex shortly acuminate or obtuse (with a sharp apiculus) ; base wedge-shaped ; upper surface dark green, glabrous at maturity, midrib grooved ; under surface clothed with a more or less detersile rufous tomentum of radiately branched hairs overlying a waxy-papillate epidermis which appears as a white glaucous surface when the hairs fall ; petiole about 1 cm. long, at first tomentose, later glabrous.

Inflorescence : an umbel of 4-7 flowers.

Pedicels : about 1 cm. long, floccose.

Calyx : saucer-shaped, 1-3 mm. long ; lobes 5, undulate, at first tomentose, then glabrescent.

Corolla : tubular-campanulate, 3·5 cm. long, fleshy, crimson, with 5 deep-crimson nectar pouches at base.

Stamens : 10, unequal, 2-3 cm. long, clustered around the style ; filaments glabrous, white ; anthers almost black.

Pistil : about length of corolla ; ovary densely white-tomentose tapering into style ; style glabrous or somewhat floccose at base ; stigma hardly wider than style.

Capsule : slightly curved, 3 cm. long, 4 mm. broad, more or less densely rufous-tomentose.

Habitat : Yunnan ; Tseku ; Chungtien Plateau ; Mekong—Yangtze and Mekong–Salween Divides. In open moist situations amongst scrub and boulders, at 13,000 ft. altitude.

The leaf shape of this species is very characteristic, as is also its indumentum. The whole leaf is at first tomentose with rufescent hairs, thin above, thick below. They quickly fall from the upper surface, less quickly from the lower. When the lower surface becomes bare it presents an appearance like the under surface of *R. neriiflorum*. But even when very bare its leaf shape distinguishes it from *R. neriiflorum*. The typical colour of the flower is a deep or lighter crimson, but in some areas it varies to a rose or to a yellow margined rose. A variety, var. *appropinquans*, is distinguished from the type by lack of indumentum and by glandular shoots and petioles.

RHODODENDRON NERIIFLORUM, *Franch.* in *Bull. Soc. Bot. France*, vol. 33 (1886), 230.

ILLUSTRATION—*Bot. Mag.*, vol. **143** (1917), t. 8727.

HABIT : a shrub of 3-9 ft. ; young stems white-tomentose at first, later glabrescent, often purplish, eglandular.

LEAVES : lamina oblong to oval, blunt or rounded at both ends, 5-10 cm. long, 2-3·5 cm. broad ; apex mucronulate ; upper surface dark green, smooth ; under surface white with waxy papillae, midrib raised, sparsely floccose, primary veins obscure ; petiole about 1·5 cm. long, glabrescent, often purplish.

INFLORESCENCE : an umbel of 5-12 flowers ; rhachis pilose.

PEDICELS : about 1 cm. long, clad with a thin fawn tomentum, eglandular.

CALYX : fleshy, coloured like corolla, variable in size, often very large, the short tube bearing 5 unequal irregular lobes, sometimes reflexed ; the lobes more or less deciduous, leaving an angular rim.

COROLLA : tubular-campanulate, fleshy, bright crimson, 3·5-4·5 cm. long, with 5 nectar pouches at base ; lobes 5, rounded, emarginate, about 1·5 cm. long, 2 cm. broad.

STAMENS : 10, unequal, slightly exserted, grouped around style ; filaments white to deep crimson at base, glabrous.

PISTIL : 3·5-4 cm. long ; ovary 6-7 mm. long, narrow, tapered to the broad base of the style, whitish to fawn-tomentose ; style white or pinkish, finely tomentose at base ; stigma small, truncate.

CAPSULE : 2 cm. long, 4 mm. broad, cylindric, grooved, curved, floccose-glabrescent.

HABITAT : Mid-West Yunnan ; Tali Range. In shady rocky situations in side valleys and in open meadows and pine forests, at 9000-12,000 ft. altitude.

This is now well known in cultivation. The typical plant is found on the Tali Range, where it attains 5 ft. in height. Plants resembling *R. neriiflorum* but differing in minor points are found in other areas in Yunnan. They are best regarded as subspecies of *R. neriiflorum* itself. These are discussed on the next page.

SUBSPECIES OF RHODODENDRON NERIIFLORUM

R. agetum, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 29.

This is found in Western Yunnan on the eastern flank of the N'Maikha—Salween Divide. It differs from *R. neriiflorum* in the rather more pointed leaves which have a peculiar alveolate appearance on the under side, in the almost glabrous and not densely floccose pedicels, and in the small calyx, which, however, is a very variable character in *R. neriiflorum* itself.

R. euchaites, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 43.

The locality for this is the Shweli—Salween Divide on the marches of Yunnan and Burma. It may be regarded as the western and woodland extension of *R. neriiflorum*. It may attain 15-20 ft., but where it extends to open and rocky ground becomes dwarfed like the type. In its typical form it makes a bole and may then be spoken of as a small tree, which *R. neriiflorum* never is. Some of the forms are setose-glandular on the young shoots.

R. phaedropum, *Balf. f. & Farrer* in *Notes R.B.G. Edin.*, vol. 13 (1922), 283.

This plant is found at Nyitadi in North-Eastern Upper Burma. It has the tall habit of *R. euchaites*, for it may run to 15 ft. It has the leaf of *R. floccigerum*, but with only traces of indumentum on the midrib and a few flecks elsewhere. It tends to be distinctly glandular on the ovary. Farrer describes it as varying much in colour from straw-yellow to crimson, a variation which Forrest has recently recorded as occurring also on *R. floccigerum*.

R. phoenicodum, *Balf. f. & Farrer* in *Notes R.B.G. Edin.*, vol. 13 (1922), 285.

This is probably equivalent to the variable *R. euchaites*.

RHODODENDRON SPERABILE, *Balf. f. & Farrer* in *Notes R.B.G. Edin.*, vol. 13 (1922), 297.

Illustration—

Habit : a bush of 3-6 ft. with erect shoots ; shoots of the current year 2-4 mm. in diameter clothed with a whitish indumentum of woolly hairs mixed with setulose glands.

Leaves : lamina elliptic or lanceolate, 5-10 cm. long, 1·5-3 cm. broad ; margin often recurved ; apex broadly acuminate ; base obtuse to rounded ; upper surface clothed in the young state with white hairs and setulose glands, at maturity dark green with vestiges of glands and hairs, midrib grooved, primary veins 10-12 on each side deeply impressed rendering the surface semi-bullate ; under surface at first whitish, later pale cinnamon to tawny clothed with a persistent thick woolly tomentum ; petiole 5-10 mm. long, clad like the stem.

Inflorescence : a terminal umbel of 4-5 flowers ; rhachis short tomentose.

Pedicels : about 2 cm. long, clothed with setulose glands and branched hairs.

Calyx : short, about 2 mm. long, cup-like, with 5 undulate lobes, glandular and ciliate.

Corolla : fleshy, tubular-campanulate, scarlet, about 3·5 cm. long, the base marked within by 5 dark-coloured pouched nectaries ; lobes 5, rounded, emarginate.

Stamens : 10, unequal, the longest nearly equal to corolla, 2·5-3·5 cm. long ; filaments glabrous.

Pistil : about 3·5 cm. long ; ovary narrow, tapering to the base of style, about 5 mm. long, clad with setulose glands and whitish branched hairs ; style glandular and hairy over the lower half.

Capsule :

Habitat : North-Eastern Upper Burma ; Hpimaw ; N'Maikha—Salween Divide. On granite screes and in ravines, at 10,000-12,000 ft. altitude.

A distinct species in the subseries. It is characterised by the oblong-oval to lanceolate, semi-bullate leaf with a thick matted wool-like indumentum on the under side. The stalked glands on the stems and petioles distinguish it from typical *R. floccigerum*. The hair covering of the leaf under surface is persistent, but its removal reveals a white papillate epidermis similar to that of *R. neriiflorum* and *R. floccigerum*.

A variety, var. *weihsiense*, has long and relatively narrow leaves and a less dense leaf indumentum which is white to pale fawn.

RHODODENDRON SPERABILOIDES, *Tagg & Forrest* in *Notes R.B.G. Edin.*, vol. 15 (1927), 319.

Illustration—

Habit : a shrub of 2-4 ft. ; branches one year old below inflorescence about 2 mm. in diameter, clothed with a white scurfy crustaceous indumentum.

Leaves : lamina oblong-elliptic to oblanceolate, 3-7 cm. long, 2-3 cm. broad ; apex obtuse, mucronate ; upper surface semi-bullate, midrib deeply grooved, primary veins 10-14 on each side deeply impressed ; under surface clad with an interrupted scurfy tomentum, midrib and primary veins prominent ; petiole about 1 cm. long, clothed like the stem.

Inflorescence : an umbel of 6-8 flowers ; rhachis 2-4 mm. long, floccose.

Pedicels : 1-1·5 cm. long, slender, floccose.

Calyx : basal part floccose, bearing 5 unequal petaloid lobes, the latter rounded, pointed or truncate, from 2-8 mm. long, sparsely floccose and fringed with hairs.

Corolla : tubular-campanulate, 2·5-3 cm. long, fleshy, deep to light crimson ; lobes 5, broadly rounded, undulate.

Stamens : 10, unequal, 1·5-2·5 cm. long ; filaments pilose at base.

Pistil : about 2·7 cm. long ; ovary conoid, 6 mm. long, densely tomentose ; style glabrous or sparsely tomentose at the base.

Capsule : narrow, cylindric, about 1·3 cm. long, 3 mm. broad, more or less curved, grooved, brownish-floccose.

Habitat : South-Eastern Tibet ; Salween — Kiu chiang Divide. In alpine scrub in side valleys, at 12,000-13,000 ft. altitude.

A species of the habit of *R. sperabile*, but differing from that species in its eglandular stems and petioles, in its smaller leaves with sparse interrupted indumentum, smaller flowers with pilose stamens and eglandular ovary. The shape and disposition of the leaves suggest affinity with some of the members of the Sanguineum subseries, but the narrow ovary somewhat tapered to the style and the narrow capsule are features which exclude it from the Sanguineum subseries and strongly suggest affinity with *R. sperabile*. The epidermis is less definitely papillate than in *R. sperabile*.

NERIIFLORUM SERIES

SUBSERIES SANGUINEUM

The members of this subseries are all shrubs of very moderate height not exceeding 5 ft., but as a rule more than 2 ft., with the exception of the dwarf species *R. aperantum* and some forms of *R. horaeum*. In foliage nearly all show an approximation to the characteristic leaf of *R. sanguineum*. The typical indumentum of the subseries is a thin white plastered coating, but there are many exceptions. Four sections of the subseries have a relatively thin non-fleshy corolla, while two sections are marked by distinctly fleshy flowers.

In the key which follows reliance has had to be placed chiefly on three characters: the kind of indumentum, the consistency of the flower, and the colour of the corolla. The subseries is composed of a bewildering assemblage of species and subspecies which it is difficult to place in a phyletic sequence. Six of the most distinct species have been chosen as representatives of six sections of the subseries, and these permit of comparatively easy discrimination by means of the combination of characters given in the key. All the other members of the subseries—and they are numerous—can be referred to one or another of these sections and each can be described by comparison with the type-species of its section. Thus, for example, *R. haemaleum* is associated with *R. sanguineum*, but deviates from it in the larger foliage, black-crimson flowers and pubescent stamens. All the species described for this subseries are not of equal specific rank, and the grouping adopted on pages 537-9 seems the best way of indicating the relative rank of the members of each section.

NERIIFLORUM SERIES

SUBSERIES SANGUINEUM

KEY TO SECTIONS AND SPECIES

1. APERANTUM SECTION

Indumentum none.
Corolla thin.
Corolla colour--crimson, rose, yellow to white.
Dwarf shrubs, matted but not prostrate, 6-18 inches.

R. aperantum.

2. CITRINIFLORUM SECTION

Indumentum white or fawn ; sparse in *R. fulvastrum* and thick and loose in *R. citriniflorum.*
Corolla thin.
Corolla colour—yellow.
Usually shrubs of 3-5 ft.

KEY TO THE SPECIES

A. Ovary glandular, indumentum dense . **citriniflorum.**
AA. Ovary eglandular, indumentum thin :
B. Indumentum sparse, discontinuous . . **fulvastrum.**
BB. Indumentum white plastered, continuous . **himertum.**

3. CLOIOPHORUM SECTION

Indumentum thin, plastered, white or fawn.
Corolla thin.
Corolla colour—rose to white.
Usually shrubs 3-5 ft.

R. cloiophorum and its subspecies.

KEY TO SECTIONS AND SPECIES OF THE **SANGUINEUM** SUBSERIES—*Continued.*

4. DICHROANTHUM SECTION

Indumentum thin, plastered, white.
Corolla very fleshy.
Corolla colour—orange to orange-crimson.
Usually shrubs of 2-5 ft.

KEY TO THE SPECIES

A. Pedicels and ovary eglandular :
  B. Leaf-base cuneate . . . . . **dichroanthum.**
  BB. Leaf-base rounded . . . . . **apodectum.**
AA. Pedicels and ovary more or less glandular :
  B. Plant of 4-5 ft. . . . . **scyphocalyx.**
  BB. Plant of 1 ft. . . . . **herpesticum.**

5. EUDOXUM SECTION

Indumentum none or very sparse.
Corolla thin.
Corolla colour—red, crimson or rose, rarely yellow (if yellow, no indumentum).
Usually shrubs of 3-5 ft.

R. eudoxum and its subspecies.

6. SANGUINEUM SECTION

Indumentum thin, plastered, white (thick and brown in *R. horaeum*).
Corolla fleshy.
Corolla colour—red, crimson and deep rose, or black-crimson.
Usually shrubs of 2-4 ft.

KEY TO THE SPECIES

A. Pedicels and ovary eglandular :
  B. Indumentum thin, plastered :
    C. Flowers bright crimson . . . **sanguineum.**
    CC. Flowers black-crimson . . . **haemaleum.**
  BB. Indumentum dense, loose-woolly . . . **horaeum.**
AA. Pedicels and ovary glandular :
  B. Indumentum thin, whitish, plastered, continuous :
    C. Flowers scarlet . . . . . **torquatum.**
    CC. Flowers black-crimson . . . . **didymum.**
  BB. Indumentum thin, sparse, discontinuous **trichophlebium.**

NERIIFLORUM SERIES

SUBSERIES SANGUINEUM

The sections defined on the previous pages contain the following rhododendrons. Those to which a full-page description has been accorded appear in ordinary type. The others differ in minor characters from those fully described, and consequently are briefly defined in the text and appear in this list in italics under the species to which they are nearest allied.

1. Section Aperantum . . R. aperantum.
2. Section Citriniflorum . R. citriniflorum.
   R. chlanidotum.
   R. fulvastrum.
   R. himertum.
   R. nebrites.
   R. poliopeplum.
3. Section Cloiophorum . R. cloiophorum.
   R. asmenistum.
   R. leucopetalum.
   R. mannophorum.
   R. roseotinctum.
4. Section Dichroanthum . R. apodectum.
   R. jangtzowense.
   R. liratum.
   R. dichroanthum.
   R. herpesticum.
   R. scyphocalyx.
5. Section Eudoxum . . R. eudoxum.
   R. asteium.
   R. brunneifolium.
   R. epipastum.
   R. glaphyrum.
   R. mesopolium.
   R. pothinum.
   R. temenium.
   R. trichomiscum.
6. Section Sanguineum . R. didymum.
   R. haemaleum.
   R. horaeum.
   R. sanguineum.
   R. torquatum.
   R. trichophlebium.

RHODODENDRON APERANTUM, *Balf. f. & Ward* in *Notes R.B.G. Edin.*, vol. 13 (1922), 231.

Illustration—

Habit : a dwarf spreading shrub about 6-20 inches high ; annual growth of the much-branched shoots short ; perulae persistent for several years.

Leaves : almost sessile in close whorls at the ends of the shoots ; lamina oval or oboval to oblanceolate, 2-5 cm. long, 1-2 cm. broad ; apex rounded or broadly obtuse, lamina narrowed from broadest part to a cuneate base ; upper surface somewhat rugulose with impressed midrib and veins ; under surface whitish with wax papillae, the raised midrib floccose to glabrescent ; petiole 5 mm. long, glabrescent.

Inflorescence : a lax umbel of about 4 flowers.

Pedicels : 2 cm. long, setulose with branched and glandular hairs.

Calyx : cup-shaped, 5 mm. long, the undulate lobes glabrous on back, but glandular on margin.

Corolla : tubular-campanulate, gibbous at base, various shades from white to rose, deep rose, orange and yellow, 4·5 cm. long ; lobes 5, rounded, 1 cm. long, 1·7 cm. broad.

Stamens : 10, sub-equal, about 2·5 cm. long, aggregated round style ; filaments glabrous.

Pistil : 3·7 cm. long ; ovary 5 mm. long, truncate, covered with setulose glands and fasciate hairs ; style glabrous ; stigma small.

Capsule : oblong truncate, 1·5-2 cm. long, 7 mm. broad, 6-8-celled ; calyx more or less persistent.

Habitat : North-Eastern Upper Burma ; Chawchi Pass ; western spur of Imaw Bum ; western flank of the N'Maikha—Salween Divide. In open stony alpine meadows and ledges of cliffs, at 12,000-14,000 ft. altitude.

This is the most dwarf member of the Sanguineum subseries. It has a very distinct habit and forms mats 1-20 ft. across. It shows extraordinary variability in the colour of the flower, and in contrast to what is the rule among rhododendrons in Western China, the variations occur even in close proximity and are not referable to distinct geographical areas. For this reason no attempt has been made to give varietal names to the colour forms. The general habit is that of the Sanguineum subseries, but the indumental features of the leaf recall those of some of the members of the subseries Neriiflorum.

RHODODENDRON APODECTUM, *Balf. f. & W. W. Sm.* (Copied from *Bot. Mag.*, t. 9014, with modifications.)

A. Flowering branch seen from above. B. Corolla opened out. C. Side view of flowering branch. D. Stamens. E. Pistil.

A, B and C about $\frac{2}{3}$ natural size. D and E enlarged.

RHODODENDRON APODECTUM, *Balf. f. & W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 10 (1917), 83.

(R. JANGTZOWENSE, *Balf. f. & Forrest*;
R. LIRATUM, *Balf. f. & Forrest.*)

ILLUSTRATION—*Bot. Mag.*, vol. 149 (1923), t. 9014.

HABIT: a shrub 4-8 ft. high; young stems with thin white indumentum, no glands; perulae fugitive.

LEAVES: lamina leathery, oblong to oblong-elliptic or broadly obovate, 4-7 cm. long, 2·5-3·5 cm. broad; apex rounded or obtuse; base rounded or obtuse; upper surface glabrous at maturity, minutely rugose, midrib and primary veins slightly grooved; under surface clothed with a thin whitish-grey or very pale fawn indumentum, midrib raised almost glabrous, primary veins obscure; petiole about 1 cm. long, glabrescent or thinly floccose.

INFLORESCENCE: a terminal umbel of 2-3 flowers.

PEDICELS: 1·2 cm. long, sparsely tomentose with floccose hairs, no glands.

CALYX: 1 cm. long, crimson-yellowish, fleshy; lobes 5, unequal, more or less rounded with undulate hair-fringed margins.

COROLLA: tubular-campanulate, fleshy, 3·5 cm. long, deep rose-crimson shaded to orange at the base; lobes 5, rounded, emarginate, 1 cm. long, 1·2 cm. broad.

STAMENS: 10, unequal, 1·5-2·5 cm. long; filaments pubescent at base.

PISTIL: 2·7 cm. long; ovary 6 mm. long, clad with rufous fasciate hairs, no glands; style glabrous.

CAPSULE: shortly oblong, truncate, more or less tomentose.

HABITAT: Western Yunnan; western flank of the Shweli—Salween Divide. Margins of rhododendron forests and in open scrub, at 10,000-11,000 ft. altitude.

This western representative of *R. dichroanthum* is distinguished by the rounded leaf bases. It is quite eglandular. A marked feature of the leaves is the peculiar longitudinal ribbing of the lamina, a character seen also but less marked in *R. dichroanthum*. *R. liratum* is only a starved form of it growing on barren rocks. *R. jangtzowense* is also a dwarf form with leaves less rounded at the base and blackened below by fungus infiltration of the spongier indumentum.

RHODODENDRON CITRINIFLORUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 35.

(R. CHLANIDOTUM, *Balf. f. & Forrest*)

ILLUSTRATION—

HABIT: a dwarf shrub of 2-4 ft.; branches below inflorescences 4 mm. in diameter; perulae more or less persistent.

LEAVES: lamina leathery, obovate or oblong-obovate, 3-5·5 cm. long, 1·5-2·5 cm. broad; apex obtuse; base obtuse; upper surface glabrescent with traces of juvenile hairs, midrib grooved, primary veins 8 on each side deeply impressed; under surface clad with a dense fawn indumentum with a somewhat spongy surface; midrib raised, sparingly floccose, the rest of venation hidden; petiole 5 mm. long, at first tomentose then glabrescent.

INFLORESCENCE: a terminal umbel of 4-6 flowers.

PEDICELS: 2-3 cm. long, woolly with a fulvous covering of setose glands and hairs.

CALYX: cupular, 3 mm. long, gland setulose and floccose; lobes 5, about 1·5 mm. long, fringed with setulose glands.

COROLLA: campanulate, bright lemon-yellow, 4 cm. long; lobes 5, emarginate, about 1·5 cm. long, 2·5 cm. broad.

STAMENS: 10, unequal, 1·8-2·5 cm. long; filaments finely puberulous at base.

PISTIL: 3 cm. long, shorter than corolla; ovary 4 mm. long, ovoid, truncate, densely clad with floccose hairs and setulose glands; style glabrous.

CAPSULE:

HABITAT: Western Yunnan; Mekong—Salween Divide; South-Eastern Tibet; Tsarong. On ledges of cliffs and on open rocks, at 13,000 ft. altitude.

This is a very distinct plant in the Sanguineum subseries, well characterised by the bright lemon-yellow flowers and by the very heavy coating of indumentum. The only other species in the subseries with heavy indumentum is *R. horaeum* with red flowers. The consistency of the flower in *R. citriniflorum* is a little more fleshy than its immediate allies. In some respects it shows affinity with *R. chaetomallum* of the Haematodes subseries, from which it can be readily distinguished in its typical state by the lemon-yellow of its corolla. *R. chlanidotum* is a state of *R. citriniflorum* with longer leaves much darkened below by fungus on the indumentum.

RHODODENDRON CLOIOPHORUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 37.

Illustration—

Habit: a dwarf shrub of 4 ft.; branches glabrescent, almost glabrous.

Leaves: lamina leathery, obovate, 3-5 cm. long, 1-1·8 cm. broad; apex obtuse; base cuneate to obtuse prolonged as a narrow wing on petiole; upper surface olive-green, glabrescent with traces of juvenile hairs, midrib grooved, primary veins 8 on each side, impressed; under surface clad with a thin wefted white to fawn indumentum, midrib and primary veins raised; petiole 5 mm. long, glabrescent.

Inflorescence: a terminal umbel of 3-4 flowers.

Pedicels: 1·7 cm. long, stout, pubescent with short floccose hairs, eglandular.

Calyx: about 1 cm. long, consisting of a short cup 1 mm. long bearing 5 unequal and often deflexing lobes.

Corolla: funnel-campanulate, rose with darker margin, 3·7 cm. long; lobes 5, rounded, emarginate, crenulate.

Stamens: 10, unequal, shorter than corolla, 1·2-2·3 cm. long; filaments glabrous.

Pistil: 3 cm. long, shorter than corolla, longer than stamens; ovary ovoid, truncate, 4 mm. long, grooved, eglandular, densely tomentose; style stout, glabrous; stigma clavate, lobulate.

Capsule:

Habitat: Western Yunnan; Mekong—Salween Divide. On open rocky slopes at 11,000 ft. altitude.

This is the central species of the section. It is characterised by its fawn to white indumentum and rose-coloured flowers. The texture and open shape of corolla distinguishes it from members of the Sanguineum section. Its consistent indumentum separates it from members of the Eudoxum section. In its typical form it is an eglandular species. The calyx is on the large side, the large unequal lobes being often deflexed, forming a collar below the corolla, as the name suggests.

SUBSPECIES OF RHODODENDRON CLOIOPHORUM

R. asmenistum, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 29.

This is best regarded as near *R. cloiophorum* but with white flowers, tinged rose on the margin. It has a large calyx and is eglandular like its ally. It has the same leaf and the same indumentum.

R. leucopetalum, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 86.

This is best defined as a pure white *R. cloiophorum*. It has a small calyx like *R. roseotinctum* but is eglandular, while its pedicels and ovary are very tomentose.

R. mannophorum, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 51.

R. mannophorum has the calyx of *R. cloiophorum*, but goes still further than *R. roseotinctum* in its tendency to be glandular. Glands occur on the pedicels, calyx-lobes and ovary.

R. roseotinctum, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 124.

This differs from the central species *R. cloiophorum* in its tendency to be glandular. It is a plant of less height, with more campanulate smaller flowers, with marginal deep-rose tinting giving a somewhat picotee character. The calyx is smaller than that of *R. cloiophorum*.

RHODODENDRON DICHROANTHUM, *Diels* in *Notes R.B.G. Edin.*, vol. 5 (1912), 212.

Illustration—*Bot. Mag.*, vol. 145 (1919), t. 8815.

Habit : a shrub of 2-6 ft. ; young stems clothed with a thin white indumentum ; stems below the flower trusses about 3·5 mm. in diameter.

Leaves : lamina oblong and obovate to oblanceolate narrowed to a cuneate base, 4-10 cm. long, 2-4 cm. broad ; apex broadly obtuse ; upper surface minutely rugulose, frequently marked by longitudinal ridges and furrows, midrib deeply grooved, primary veins 10-14 on each side impressed ; under surface clothed with a thin white to greyish-white indumentum, midrib prominent, primary veins slightly raised or obscure ; petiole ·5-1 cm. long, greenish, glabrous or with a thin white indumentum.

Inflorescence : an open umbel of 4-8 flowers.

Pedicels : about 1·5-2 cm. long, yellowish-green, sparingly floccose, expanded as a green disk below calyx lobes.

Calyx : fleshy, about 12 mm. long, split to the basal green cup into 4 or 5 pale salmon or orange-pink lobes, sparingly ciliate with fasciate hairs.

Corolla : tubular-campanulate, 4 cm. long, fleshy, with 5 nectar pouches at base, orange flushed salmon-rose ; lobes 5, rounded, crenulate, 1·5 cm. long, 2 cm. broad.

Stamens : 10, clustered around the style, 2-3 cm. long ; filaments pinkish and finely puberulous at base, greenish-white and glabrous above.

Pistil : 3·5 cm. long ; ovary conoid, truncate, 7 mm. long, whitish tomentose with fasciate hairs, no glands ; style glabrous, greenish, stigma small.

Capsule :

Habitat : Mid-Western Yunnan ; eastern flank of the Tali Range. In dry open rocky meadows and open shady situations, at 11,000-12,000 ft. altitude.

This and its section need only be compared in the subseries with the section Sanguineum. The colour in the corolla is always an orange, sometimes tinted with red, crimson or rose. The typical plant is confined to the Tali Range. The other three members of the section deviate from the central species as follows : *R. apodectum* is a western expression of *R. dichroanthum*, and can be recognised by the very rounded, non-cuneate leaf base ; *R. herpesticum* is a dwarf about 1 ft. high, very glandular and with a cup-like calyx ; *R. scyphocalyx* is near *R. herpesticum* but a larger plant with more obovate leaves, also very glandular and with a similar calyx.

RHODODENDRON DIDYMUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1922), 256.

ILLUSTRATION—

HABIT : a dwarf alpine shrub ; the young shoots glandular with the leaves disposed in short whorls ; perulae more or less persistent.

LEAVES : lamina leathery, obovate, 2-5 cm. long, 1-1·8 cm. broad ; apex broadly obtuse to rounded ; base cuneate ; upper surface dark green, rugulose ; under surface clad with a persistent ash-grey indumentum ; petiole about 5 mm. long, glabrescent or slightly glandular.

INFLORESCENCE : a short umbel of about 4 flowers.

PEDICELS : 2-3 cm. long, densely setulose-glandular.

CALYX : 4 mm. long, setulose-glandular outside ; lobes 5, rounded, unequal.

COROLLA : tubular-campanulate, 2·5 cm. long, black-crimson ; lobes 5, rounded, entire or emarginate, 1 cm. long, 1·5 cm. broad.

STAMENS : 10, 1·2-2 cm. long ; filaments red, glabrous ; anthers dark brown, pollen white.

PISTIL : about 2·5 cm. long ; ovary dome-shaped, 5 mm. long, grooved and truncate, glandular on ridges, with fewer hairs in grooves ; style glabrous, red ; stigma a little wider than style.

CAPSULE :

HABITAT : South-Eastern Tibet ; Salween—Kiu chiang Divide. On moist stony alpine meadows and slopes, and ledges of limestone cliffs, at 14,000-15,000 ft. altitude.

This is an alpine glandular expression of *R. haemaleum* found further west. It differs from its ally in the much smaller leaves and in its very densely glandular ovary with practically no hairs.

RHODODENDRON EUDOXUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 62.

Illustration—

Habit : a shrub about 6 ft. high with thin, twiggy branches, those a year old about 3 mm. in diameter with vestiges of floccose hairs and glands.

Leaves : lamina thinly leathery, obovate or oblong-oval, 3-7 cm. long, 1·5-2·5 cm. broad ; apex rounded ; base obtuse ; upper surface mat, midrib grooved, lined with withered floccose hairs, primary veins 12 on each side not conspicuous ; under surface clad with a thin veil of indumentum, midrib raised, primary veins raised ; petiole 5-7 mm. long, grooved, clad with withered floccose hairs and glands.

Inflorescence : a terminal umbel of 5-6 flowers.

Pedicels : 2 cm. long, densely clad with fasciate floccose hairs mixed with glands.

Calyx : subfoliaceous, 7 mm. long, the cupular base fleshy, glandular and floccose ; lobes 5, membranous, unequal, obtuse or rounded, gland and floccose ciliate, soon falling off.

Corolla : tubular-campanulate, deep clear crimson-rose, 3·5 cm. long ; lobes 5, rounded, about 1·5 cm. long, 1·8 cm. broad.

Stamens : 10, unequal, 1·5-2·5 cm. long ; filaments finely puberulous at base.

Pistil : nearly equalling in length the corolla ; ovary 4 mm. long, cylindric, truncate, densely clad with glands and fasciate hairs ; style glabrous.

Capsule :

Habitat : North-Western Yunnan ; Mekong — Salween Divide ; South-Eastern Tibet ; Tsarong ; Ka-gwr-pu. In open rhododendron thickets at 11,000-13,000 ft. altitude.

This, the central species of its section, is distinguished from members of the Cloiophorum section by the almost evanescent indumentum, and from members of the Citriniflorum section by the same character and also by the crimson-rose flower as opposed to yellow. It is typically a glandular plant, and where in its area it becomes almost eglandular it is known as *R. temenium*, and when entirely eglandular as *R. pothinum*.

SUBSPECIES OF RHODODENDRON EUDOXUM

R. asteium, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol 13 (1920), 235.

This is closely related to *R. temenium*, from which it differs in its more pronounced indumentum and its larger calyx. It is eglandular. It comes from the same area as *R. temenium.*

R. brunneifolium, *Balf. f. & Forrest. Ibid.*, vol. 13 (1920), 33.

This is very nearly allied to *R. temenium*, differing in its more marked indumentum, which gives a brownish tint to the under surface of the leaf, and also in the very small calyx.

R. epipastum, *Balf. f. & Forrest. Ibid.* (1922), 258. See *R. mesopolium.*

R. glaphyrum, *Balf. f. & Forrest. Ibid.* (1920), 45.

In its typical form it comes near to *R. temenium*, but is usually a smaller plant with a glabrous or almost glabrous under surface to the leaf. It shows remarkable variation in colour after the fashion of *R. aperantum*, with which it seems to have affinity. The usual colour is a rose, but it varies to white and yellow. It is the only member of the section which may show yellow flowers, but its lack of indumentum separates it easily from all the species in the section Citriniflorum. This differs from the central species of the section Eudoxum in its lack of glands and in its glabrous leaves.

R. mesopolium, *Balf. f. & Forrest. Ibid.* (1920), 51.

This is akin to *R. temenium*, from which it differs in the more marked indumentum. Both are almost eglandular. It resembles *R. asteium*, but has not the large calyx of that plant. Typically the flower is pale rose. *R. epipastum* is placed here as a form with smaller dark-rose flowers.

R. pothinum, *Balf. f. & Forrest. Ibid.*, vol. 12 (1920), 147. See *R. temenium.*

R. temenium, *Balf. f. & Forrest. Ibid.*, vol. 11 (1919), 146.

This is from the same area as *R. eudoxum* and can be regarded as an expression of that plant where the glandular character is very much less prominent and often wanting. It was originally described from fruiting specimens, and there seems little doubt that *R. pothinum* is the same subspecies in flower.

R. trichomiscum, *Balf. f. & Forrest. Ibid.*, vol. 12 (1920), 169.

This is near to *R. eudoxum* itself, and may be regarded as a very glandular and bristly expression of that species. It comes from the same area. The young stems are clad with bristle glands, and the ovary also is densely clad with long-stalked glands. The flower is pale rose-pink.

RHODODENDRON FULVASTRUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 45.

Illustration—

Habit : a small bush about 2 ft. high ; young stems thinly clad with indumentum of hairs and a few glands ; perulae fugitive.

Leaves : lamina oblong-oval, 3-6·5 cm. long, 1-1·7 cm. broad ; apex obtuse ; base obtuse ; upper surface glabrous, midrib and primary veins (about 10 on each side) impressed ; under surface with very thin detersile indumentum, leaving the epidermis visible here and there, midrib prominent, primary veins inconspicuous ; petiole 5 mm. long, clad like the stems.

Inflorescence : an umbel of about 4 flowers.

Pedicels : 2 cm. long, floccose and sparingly glandular.

Calyx : 4 mm. long, lobes rounded, yellow, glabrous but for floccose cilia.

Corolla : open campanulate, pale lemon-yellow without markings, 3-3·5 cm. long ; lobes 5, rounded, emarginate.

Stamens : 10, unequal, 2-2·5 cm. long ; filaments glabrous.

Pistil : about 2·5 cm. long, equalling or slightly exceeding the stamens ; ovary 3·5 mm. long, densely tomentose with hairs, eglandular ; style glabrous.

Capsule :

Habitat : South-Eastern Tibet ; Salween—Kiu chiang Divide. On rocky slopes and ledges of cliffs in ravines, at 14,000 ft. altitude.

This species has a very thin indumentum recalling what is found in the section Eudoxum. Its yellow flowers distinguish it readily from all members of that section except *R. glaphyrum*, which may have a yellow corolla but is quite without indumentum. Both *R. citriniflorum* and *R. himertum* are marked off from this species by their uniform unbroken indumentum. Like *R. himertum*, it tends to be eglandular.

RHODODENDRON HAEMALEUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 71.

Illustration—

Habit : a small undershrub 2-4 ft. high with thin, straight branches, those a year old about 2 mm. in diameter showing vestiges of a juvenile indumentum ; perulae deciduous.

Leaves : lamina leathery, oblanceolate or oblong or obovate, 4-8 cm. long, 1·5-2·5 cm. broad ; apex obtuse, rounded ; base tapered and forming a slight wing to the petiole ; upper surface glabrous or with vestiges of fallen hair on midrib, primary veins 8-12 on each side grooved ; under surface white to pale fawn, clad by a thin compact smooth indumentum, midrib glabrescent, primary veins slightly prominent covered with indumentum ; petiole 5-10 mm. long, glabrescent.

Inflorescence : a terminal umbel of 3-5 flowers.

Pedicels : slender, unequal, 1·2-2·5 cm. long, more or less pubescent with floccose hairs, eglandular.

Calyx : about 3·5 mm. long, floccose tomentose ; lobes about 2 mm. long, crimson, floccose ciliate.

Corolla : fleshy, tubular-campanulate, black-crimson, 3-4 cm. long, tube gibbous at base ; lobes 5, rounded, emarginate, about 1·2 cm. long and broad.

Stamens : 10, unequal, 1·3-2·4 cm. long ; filaments white, faintly puberulous at base.

Pistil : about 3 cm. long ; ovary 3·5 mm. long, cylindric-conoid, densely tomentose, eglandular ; style glabrous, expanding to a discoid lobulate stigma.

Capsule :

Habitat : South-Eastern Tibet ; Mekong—Salween Divide. In rhododendron scrub on the margins of forests, at 12,000 ft. altitude.

In its typical forms this deviates from *R. sanguineum* in its much more elongated and more pointed foliage, in its black-crimson flowers and in its pubescent stamens. Like its ally, it is eglandular. Forms intermediate between it and *R. sanguineum* have been collected.

RHODODENDRON HERPESTICUM, *Balf. f. & Ward* in *Notes R.B.G. Edin.*, vol. 10 (1917), 114.

Illustration—

Habit : a shrub about 12 inches high forming a tangled growth, young stems bristly glandular.

Leaves : lamina oblanceolate or oblong to oblong-elliptic, 7 cm. long, 3 cm. broad ; apex rounded or sub-retuse with small mucro ; base cuneate or rarely obtuse ; upper surface dark green, slightly rugulose at maturity, glabrous, midrib and primary veins grooved ; under surface grey-white to fawn with a thin uniform compact indumentum, midrib prominent, glabrescent ; petiole 5 mm. long, glabrous or with vestiges of a juvenile indumentum.

Inflorescence : a terminal umbel of 2-4 flowers.

Pedicels : 2 cm. long, setulose-glandular and floccose.

Calyx : cupular, about 8 mm. long, glandular ; lobes 5, unequal, rounded, ciliate with stalked glands.

Corolla : tubular-campanulate, 3·5 cm. long, dull yellow to orange-red ; lobes 5, almost round, 1·1 cm. long, 1·3 cm. broad.

Stamens ; 10, unequal, 1·8-2·5 cm. long ; filaments puberulous.

Pistil : 2·7 cm. long ; ovary 5 mm. long, clad with long fasciate hairs and setulose glands ; style glabrous, hardly expanded below the stigma.

Capsule :

Habitat : North-Eastern Upper Burma ; Imaw Bum. Amongst bamboo scrub and rhododendrons on rocky slopes, at 12,000-13,000 ft. altitude.

This differs widely from *R. dichroanthum* in the dwarf habit, as it is only 1 ft. high, in the very glandular pedicels and ovary, and in the cup-like calyx with rounded lobes.

RHODODENDRON HIMERTUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 48.

(R. NEBRITES, *Balf. f. & Forrest*;
R. POLIOPEPLUM, *Balf. f. & Forrest.*)

ILLUSTRATION—

HABIT : a small shrub ; young stems clad with a thin sprinkling of grey floccose hairs ; perulae fugitive.

LEAVES : lamina coriaceous, narrow-obovate or oval, 3-5 cm. long, 1-2 cm. broad ; apex obtuse, mucronulate ; base obtuse, oblique ; upper surface glabrous ; under surface whitish with a thin continuous indumentum, the surface somewhat alveolate, midrib prominent, glabrescent ; petiole about 5 mm. long, white floccose, no glands.

INFLORESCENCE : an umbel of 4 flowers.

PEDICELS : 1·5 cm. long, more or less densely woolly floccose, no glands.

CALYX : 4 mm. long, woolly tomentose ; lobes floccose-ciliate.

COROLLA : campanulate, 3 cm. long, yellow ; lobes 5, rounded, emarginate.

STAMENS : 10, shorter than corolla and pistil ; filaments glabrous.

PISTIL : nearly equal to corolla ; ovary densely floccose-tomentose, without glands ; style glabrous.

CAPSULE :

HABITAT : South-Eastern Tibet ; Tsarong. On open peaty meadows and rocky slopes, at 12,000-15,000 ft. altitude.

At first sight this is a close ally of *R. citriniflorum*, but while the latter is markedly glandular, *R. himertum* is eglandular with pedicels and ovary floccose. An additional distinction of some importance is in the indumentum of *R. himertum*, which is thin and white like that of *R. cloiophorum*, with which section it has affinity except in flower colour. *R. nebrites* and *R. poliopeplum* are not more than forms of *R. himertum*. The former with lemon-yellow flowers on longer pedicels than those of *R. himertum*, the latter with larger leaves and dull pale-yellow flowers.

RHODODENDRON HORAEUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1922), 264.

Illustration—

Habit: a procumbent shrub of ½-1 ft. with leaves crowded in rosettes, young shoots thick, clad with a thin whitish tomentum; the perulae persist for several years.

Leaves: lamina leathery, obovate, 3-5 cm. long, 1-2 cm. broad; apex rounded or obtuse, mucro conspicuous; base wedge shaped from the broadest part of lamina, but in short leaves more obtuse; upper surface semi-bullate with grooved midrib and primary veins, glabrous or with vestiges of tomentum in the venation grooves; under surface fulvous to grey-brown clad with a thick persistent indumentum with a soft woolly surface; midrib prominent, wide at base, tapering to apex, primary veins more or less concealed by indumentum; petiole 1 cm. long, grooved above, whitish-tomentose like the shoots.

Inflorescence: an umbel of 4 flowers.

Pedicels: 2 cm. long, setulose-glandular and floccose.

Calyx: cup-like, about 1 cm. long, split into 5 irregular, unequal lobes, the latter floccose-ciliate and often deciduous.

Corolla: tubular-campanulate, deep crimson, 3·5 cm. long, tube fleshy with 5 pouches at the base; lobes 5, rounded, notched, about 8 mm. long, 1·3 cm. broad.

Stamens: 10, about 1·7 cm. long; filaments minutely and sparingly puberulous.

Pistil: 2·4 cm. long; ovary conoid, truncate, 4 mm. long, tomentose; style glabrous.

Capsule:

Habitat: South-Eastern Tibet; Tsarong; Salween—Kiu chiang Divide. On cliffs and rocky slopes at 13,000 ft. altitude.

This is easily distinguished in its section by the dense brown indumentum. Only *R. citriniflorum* in the subseries Sanguineum has an indumentum as thick, but that species has yellow flowers. The leaf is otherwise a typical Sanguineum leaf. In its flower it is distinguished from the central species of its section (*R. sanguineum*) by the larger calyx and the more fleshy consistency of the corolla. It is one of the dwarfs of the Sanguineum subseries, being usually about 1 ft. high. This dwarf sub-prostrate habit distinguishes it from forms of *R. chaetomallum*, with which it has some affinity and with which it may be confused. In this dwarf alpine species, as in *R. aperantum*, the perulae tend to be very persistent.

RHODODENDRON SANGUINEUM, *Franch.* in *Journ. de Bot.*, vol. 12 (1898), 259.

Illustration—

Habit : a small undershrub of 3 ft. with short thin branches ; one-year-old branches 2·5 mm. in diameter lightly clad with a thin white indumentum, eglandular ; perulae deciduous.

Leaves : lamina leathery, obovate, oval or narrowly oblong, 4-6 cm. long, 2-2·5 cm. broad ; apex rounded or obtuse ; base obtuse and slightly prolonged on the petiole ; upper surface dark green, glabrous, midrib and primary veins slightly grooved ; under surface grey-white covered with a thin skin of indumentum, midrib and primary veins prominent ; petiole about 1 cm. long, glabrescent.

Inflorescence : a terminal umbel of 3-4 flowers.

Pedicels : 1·5 cm. long, more or less floccosely woolly, swollen below calyx.

Calyx : 2-3·5 mm. long, outside floccosely woolly at base ; lobes bright red, ovate or rounded.

Corolla : tubular-campanulate, bright crimson, 3·5 cm. long, with 5 fleshy pouches at base ; lobes 5, 1·5 cm. long, 1·8 cm. broad, emarginate, crenulate.

Stamens : 10, subequal, 1·6-2·5 cm. long ; filaments thin, glabrous.

Pistil : 3 cm. long ; ovary 4 mm. long, cylindric-conoid, truncate, densely tomentose with fasciate hairs, eglandular ; style glabrous.

Capsule : oblong-cylindric, truncate, 1·5 cm. long, 6-8 mm. diameter, more or less rufous-tomentose.

Habitat : Western Yunnan ; Sela : South-Eastern Tibet ; Mekong–Salween Divide. Amongst scrub in open situations and margins of pine forests, at 13,000-14,000 ft. altitude.

The indumentum of this species is similar to what is found in the section Cloiophorum and also in some members of the section Citriniflorum, but its flowers are fleshy, more tubular and a deep red. In comparison with the members of its own section, it tends to be eglandular and to have glabrous stamens.

There is a marked alpine variety, var. *didymoides*, with persistent perulae, small leaves, small rose flowers and a strong tendency to glands. This variety is intermediate between *R. sanguineum* and *R. didymum*.

RHODODENDRON SCYPHOCALYX, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1922), 291.

Illustration—

Habit : a shrub of 4-5 ft. ; young stems about 3 mm. in diameter, clad with vestiges of a thin white indumentum, no glands.

Leaves : lamina obovate, 6-9·5 cm. long, 2·5-4 cm. broad ; apex rounded or rarely obtuse, apiculate ; base sub-auriculate ; upper surface dark green, minutely rugulose, midrib and primary veins impressed ; under surface smooth, clad with a thin white indumentum, midrib prominent, lateral veins obscure ; petiole about 5 mm. long, clothed like the stem, no glands.

Inflorescence : a 4-flowered umbel.

Pedicels : about 2 cm. long, densely setulose with glandular and branched hairs.

Calyx : erect, cup-like, about 1 cm. long, coloured like the corolla, the base fleshy, setulose glandular ; lobes 5, about 5 mm. long, 5 mm. broad with shortly ciliate margins.

Corolla : tubular-campanulate, rose-orange, yellowish-crimson or coppery-yellow, about 4 cm. long, the base with 5 fleshy pouches ; lobes 5, 1·5 cm. long, 2 cm. broad.

Stamens : 10, almost equal, about 3 cm. long, clustered around the style ; filaments hairy at the base.

Pistil : about 3·5 cm. long ; ovary 5 mm. long, ovoid, truncate, clad with fasciate hairs and setulose glands ; style glabrous.

Capsule :

Habitat : North-Eastern Upper Burma, N'Maikha—Salween Divide ; Hpimaw Pass ; Western Yunnan, Shweli—Salween Divide. In bamboo and mixed scrub, open rocky slopes and the margins of cane brakes, at 10,000-13,000 ft. altitude.

This finds its nearest ally in *R. herpesticum*. It has the same glandular development of pedicel and ovary and the same calyx, but its leaves are broadly obovate and its flower is larger.

RHODODENDRON TORQUATUM, *Balf. f. & Farrer* in *Notes R.B.G. Edin.*, vol. 13 (1922), 303.

Illustration—

Habit: a broad spreading bush of 2-4 ft.; young shoots about 3 mm. in diameter, clad with a whitish indumentum, eglandular; perulae not markedly persistent.

Leaves: lamina oval to obovate, 3-6 cm. long, 1-2·5 cm. broad; apex broadly obtuse (rarely rounded), mucronate; base obtuse; upper surface slightly rugulose (at maturity glabrous), midrib grooved, primary veins about 10 on each side deeply impressed; under surface at first white, later ash-grey, clothed with a thin indumentum which wears off the midrib and lateral veins; petiole about 5 mm. long, clothed like the stems.

Inflorescence: an umbel of 3-4 flowers.

Pedicels: about 2 cm. long, more or less setulose-glandular and floccose.

Calyx: about 1 cm. long, fleshy, coloured like corolla, the basal cup about 2 mm. long, densely glandular and tomentose; lobes 5, unequal, the longest about 8 mm. long, fringed with glands and hairs, often reflexed and finally deciduous.

Corolla: tubular-campanulate, 3·5 cm. long, shades of salmon and scarlet; lobes 5, rounded, emarginate, 1 cm. long, 1·5 cm. broad.

Stamens: 10, unequal, 1·5-2 cm. long; filaments puberulous.

Pistil: about 3 cm. long; ovary 4 cm. long, ovoid, truncate, clothed with fasciate hairs and a few setulose glands; style at base clothed with a few stalked glands and floccose hairs.

Capsule:

Habitat: North-Eastern Upper Burma; Maku-ji Pass.

The nearest ally is *R. sanguineum* itself. *R. torquatum* has, however, a bistrate indumentum, the pedicels and ovary are more or less glandular, and the calyx forms a distinct collar which falls away when the corolla withers. From *R. didymum*, which is also very glandular, the character of its foliage is a mark of distinction. It is also akin to *R. scyphocalyx*.

RHODODENDRON TRICHOPHLEBIUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 62.

Illustration—

Habit : a small bush ; young shoots at first setulose-glandular, later glabrescent.

Leaves : shortly petiolate or subsessile ; lamina thick, leathery, oblong-oval, 1·5-3 cm. long, ·5-1 cm. broad ; apex acute ; margin recurved ; base obtuse ; upper surface glabrous, midrib and primary veins grooved ; under surface pale, very sparsely clothed with white floccose hairs which are more freely developed on the primary veins, midrib raised, lateral veins slightly raised ; petiole 2 mm. long.

Inflorescence : an umbel of 4 flowers.

Pedicels : 1 cm. long, more or less gland-setulose.

Calyx : small, fleshy ; lobes 5, shortly ciliate, rounded, more or less glandular.

Corolla : campanulate, fleshy, crimson, 2·5 cm. long ; lobes 5, rounded, emarginate.

Stamens : 10, much shorter than corolla and pistil ; filaments glabrous.

Pistil : equalling corolla ; ovary truncate, 2 mm. long, clad with stalked glands ; style glabrous.

Capsule : 1·3 cm. long.

Habitat : South-Eastern Tibet ; Tsarong.

This is an imperfectly known plant with the description based on scanty material. In its indumentum characters it favours *R. eudoxum* ; in its habit and tendency to glands it recalls *R. didymum* ; its flowers in consistency and colour suggest *R. sanguineum*, but are much smaller.

OVATUM SERIES

(Subsection *Azaleastrum* Planch.)

General Characters :—Small erect shrubs with slender branches. Leaves evergreen, not lepidote, glabrous except the midrib. Flowers medium-sized, *solitary from axillary perulate buds*. Calyx-lobes *large and broad*, glabrous or fringed with stalked glands or hairs. Corolla-tube mostly short and spreading ; lobes 5. *Stamens 5*, exserted. Ovary 5-celled, bristly ; style glabrous or with a few hairs near the base. *Capsule very short*, surrounded by the persistent calyx.

Distribution :—China and the small islands fringing, and Eastern Tibet.

A very natural and well-defined group approaching closely to the subgenus *Azalea*. It may be at once recognised by its *glabrous* evergreen leaves, axillary *solitary* flowers with *large calyx-lobes*, *5 stamens*, and short ovoid capsules.

The only other group with *axillary* flowers and glabrous leaves is the *Stamineum* series (Section *Choniastrum* Franch.) ; this, however, has a very obsolete calyx, rather long and narrow corolla-tube, 10 stamens, and rather long cylindric fruits. Very few other species of Rhododendron have axillary flowers, and they have lepidote or hairy leaves.

J. H.

OVATUM SERIES

KEY TO THE SPECIES

A. Corolla-tube rather wide and shorter than the lobes ; leaves ovate, lanceolate or oblanceolate, rarely elliptic ; filaments always pubescent ; calyx-lobes glabrous on the back or nearly so ; flowers white or rose-pink :

B. Calyx-lobes glabrous on the margin, rounded-oblong ; leaves broadly rounded-ovate ; Eastern China . **ovatum.**

B. Calyx-lobes fringed with hairs or stalked glands :

C. Leaves ovate or elliptic-ovate, distinctly reticulate below, broadest below the middle ; calyx-lobes rounded, densely fringed with shortly stalked glands ; West Central China . . . . . **Bachii.**

C. Leaves lanceolate or oblong-lanceolate, obtuse or rounded at the base, mostly more or less triangular-acuminate ; calyx-lobes often narrowed to the apex, fringed with short fine hairs or with stalked glands or with both ; Yunnan . . . . . **leptothrium.**

C. Leaves more or less oblanceolate, with thick cartilaginous margins, only nervose below ; flowers creamy white, with small blue-purple spots inside the back of the tube ; South China . . . . . **hongkongense.**

A. Corolla-tube broadly cylindric, only slightly widened towards the top, much longer than the lobes ; leaves obovate or obovate-oblanceolate (see figure), wedge-shaped at the base ; filaments glabrous or slightly pubescent ; calyx-lobes with bristly hairs outside towards the base ; flowers crimson ; Yunnan . . . . . **Vialii.**

RHODODENDRON BACHII, *Léveillé.*

(R. OVATUM, *Rehd. & Wils.*, partly, not of *Maximowicsz.*)

ILLUSTRATION—

Very similar to typical *R. ovatum*, but leaves more elliptic-ovate or broadly elliptic and subacute at the very base, slightly decurrent into the rather longer petiole ; calyx-lobes densely fringed with shortly stalked glands ; capsule about $\frac{1}{5}$ in. long, only slightly exceeding the persistent calyx-lobes.

HABITAT : Hupeh, Kiangsi and Kweichow Provinces, China.

NOTE.—In many respects this is intermediate, not only in geographical range between typical *R. ovatum* and the Yunnan *R. leptothrium*, but also in its botanical characters ; it has the leaves of the former, the calyx of the latter.

RHODODENDRON HONGKONGENSE, *Hutchinson, new name.*

(Azalea myrtifolia, *Champion* ; *Bot. Mag.*, sub. t. 4609 (1851).)

Illustration—*Bot. Mag.* l.c.

General habit and characters of *R. ovatum*, but winter flowering bud-scales glabrous outside, leaves more or less oblanceolate or obovate-oblanceolate, narrowed to the base, broadest about or above the middle. Flowers white with violet specks. Calyx-lobes smaller, rounded, and densely fringed with shortly stalked glands. Capsule warted, scarcely $\frac{1}{3}$ in. long, the persistent calyx-lobes becoming reflexed.

Habitat: Hong-Kong and Kwangtung ; 2400 ft.

Note.—This appears to be quite a distinct species and recognised as such by Champion in 1851. It is found in company with *R. Farrerae*, Tate (*Azalea squamata*, Lindl.) on rocks on the Black Mountain, Hong-Kong.

RHODODENDRON LEPTOTHRIUM, *Balf. f. & Forrest.*

(R. AUSTRALE, *Balf. f. & Forrest.*)

ILLUSTRATION—

This species differs from typical *R. ovatum* and *R. Bachii* in the shape of its leaves, which are almost invariably *lanceolate* or *oblong-lanceolate* and obtuse or rounded at the base; the calyx-lobes are also more pointed. The late Professor Sir Isaac Bayley Balfour distinguished two species mainly on whether the calyx-lobes were fringed with glands or merely with short non-glandular hairs. I have found all grades between these two conditions amongst the numerous specimens in Edinburgh, some with glands half-way up the calyx-lobes, others with both glands and short hairs intermixed. There also seems some variation in the winter bud-scales, sometimes these being glabrous or nearly so, at other times rather densely puberulous-pubescent. I think there is only one rather variable or plastic species represented here, sometimes approaching very closely to *R. Bachii* from West Central China.

HABITAT: Western Yunnan, from 25° N. to 27° 46′ N.; 7000-11,000 ft. [I have examined the following herbarium specimens collected by G. Forrest:—8039, 9341, 9901, 11,850, 11,863, 12,845, 13,881, 15,030, 15,673, 15,736, 16,069, 16,355, 17,663, 17,709, 17,736, 17,828, 19,452, 19,455, 19,460, 19,462, 21,036, 21,698.]

NOTE.—Ward has collected a plant (no. 6335) in the Payo Tsangtse Gorge, Eastern Tibet, at an altitude of 6000-7000 ft. which comes very close to *R. leptothrium*. So far I have seen only a fruiting example, and must wait until there are flowers before deciding as to its status.

Rhododendron ovatum, *Maxim.*

A. Apex of leaf. B. Stamen. C. Calyx and style. D. Ovary. E. Transverse section of ovary. F. Fruit.

RHODODENDRON OVATUM, *Maxim.*

Illustrations—*Bot. Mag.*, t. 5064 (1858) ; *Journ. Hort. Soc.* 2 : 126, t. 2 (1847).

Habit : shrub up to 12 ft. high ; bark pale and glabrous ; young branchlets with scattered stalked glands and also softly hairy.

Leaves : evergreen, *broadly ovate*, rounded at base, acute and with a long mucro at the tip, 1½-2 in. long, ¾-1 in. broad, glabrous except the shortly hairy midrib above ; no scales ; lateral nerves raised above ; leaf-stalks up to ⅛ in. long, softly hairy.

Inflorescence : 1-flowered from each bud, axillary ; bud-scales mealy outside.

Flowers : white or white and pink-spotted ; stalks ⅔ in. long with shortly stalked glands and mealy.

Calyx : lobes large, rounded-obovate, glabrous except at base, tube short, mealy and glandular outside.

Corolla : 5-lobed, glabrous outside, pubescent inside the throat.

Stamens : 5 ; filaments pubescent.

Ovary : bristly, 5-celled.

Style : as long as longest stamens, glabrous.

Capsule : ⅓ in. long, broadly ovoid, shortly bristly, surrounded by the enlarged persistent calyx.

Habitat : Eastern China ; Chusan Islands and Chekiang Province.

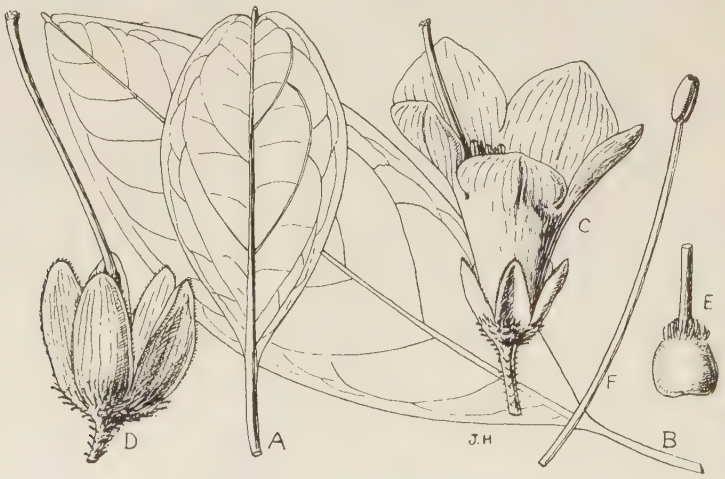
RHODODENDRON VIALII, *Delavay & Franchet.*

ILLUSTRATION—

HABIT : shrub 6-10 ft. high ; branchlets shortly pubescent.

LEAVES : obovate oblanceolate or obovate, rather long-stalked, conspicuously mucronate and often emarginate at the apex, wedge-shaped at the base, $1\frac{1}{3}$-4 in. long, $\frac{2}{3}$-$1\frac{1}{2}$ in. broad, finely nervose below, minutely hairy on the midrib above ; leaf-stalk up to $\frac{3}{4}$ in. long, flattened above, puberulous.

INFLORESCENCE : 1-flowered from each bud, axillary ; bud-scales minutely hairy, the outer glabrous.



RHODODENDRON VIALII, *Delavay & Franchet.*
A, B. Leaves. C. Flower. D. Calyx and style. E. Ovary. F. Stamen.

FLOWERS : crimson ; stalks $\frac{1}{6}$-$\frac{1}{3}$ in. long, covered with sticky gland-tipped hairs.

CALYX : lobes crimson, rounded-oblong, $\frac{1}{5}$ in. long, closely fringed with sessile glands, *densely bristly outside* towards the base.

COROLLA : crimson, 5-lobed ; tube widely cylindric, about $\frac{3}{4}$ in. long, glabrous ; lobes rounded, nearly $\frac{1}{2}$ in. long.

STAMENS : 5, *filaments glabrous* or *slightly pubescent.*

OVARY : 5-celled, viscid-bristly.

STYLE : glabrous, reddish.

HABITAT : Southern Yunnan ; 4000-6000 ft.

NOTE.—A distinct species diverging from the *ovatum* type in its narrower and longer corolla with usually glabrous filaments.

PONTICUM SERIES

The Ponticum series as considered here includes what have previously been regarded as three distinct series: Ponticum, Chrysanthum and Metternichii. They constitute a northern development in the genus and show undoubted phyletic association. The series is divided into two subseries. The Ponticum subseries occurs in North America, Europe and Asia Minor; the Caucasicum subseries completes a geographical girdle by bringing in the Caucasus, Northern Asia and Japan.

The series, although a natural association, shows an unusual range in the diagnostic characters defining its species. The leaves may have a thick indumentum or may be quite glabrous; the ovary may be tomentose, glandular or glabrous; the calyx may be large or obsolete; in habit the series includes dwarf shrubs like *R. chrysanthum* and almost tree-like species in *R. catawbiense*. The chief distinguishing features of the series are: (1) The elongation of the flower axis with resultant candelabroid inflorescence; (2) a tendency to length in the pedicel which in fruit elongates still further and becomes stiffly erect; (3) the corolla is funnel-campanulate, deeply cut into oblong lobes, which tend to equal in length the corolla-tube—a feature unusual in the elepidote rhododendrons.

The species with glabrous leaves may invite comparison on that account with a few members of the Irroratum series, but the characteristic Ponticum truss is a sufficient distinction. The species with heavy woolly indumentum recall Taliense but only in this foliage character. The indumentum of *R. brachycarpum* bears some resemblance to what is found in the typical members of the Lacteum series and also in members of the series Campanulatum.

KEY TO THE SUBSERIES

1. Leaves at maturity glabrous; flowers never yellow. Species native in America, Europe and Asia Minor **Ponticum.**
2. Leaves with a distinct indumentum except *R. chrysanthum* with yellow flowers, and *R. Fauriei* with white to yellowish flowers. Species native in Caucasus, Northern Asia and Japan . . . . . **Caucasicum.**

H. F. T.

PONTICUM SERIES

SUBSERIES CAUCASICUM

Considering phyletic association, there would appear to be in this subseries some five groups which are in accord with the geographical distribution. These are: (1) caucasicum with Smirnowii and Ungernii; (2) brachycarpum and Fauriei; (3) Metternichii with Degronianum and Makinoi; (4) the outlier chrysanthum; (5) adenopodum, which is also somewhat isolated.

There is a suggestion of a link between this subseries and the southern series Taliense through such species as *R. Przewalskii*. These, moreover, are intermediate geographically.

KEY TO THE SPECIES

A. Dwarf alpine of 6-12 in. Flowers yellow . **chrysanthum.**
AA. Shrubs or small trees of 3-20 ft. Flowers never yellow except sometimes in *R. caucasicum* and *R. Fauriei*:
B. Leaves oblong-elliptic, broad for their length. Indumentum thin (absent in *R. Fauriei*):
C. Leaf base wedge-shaped; style long (3-4 cm.) **caucasicum.**
CC. Leaf base rounded; style long (4-4·5 cm.) **hyperythrum.**
CCC. Leaf base rounded; style short (1·5 cm.):
D. Leaf under side with indumentum . **brachycarpum.**
DD. Leaf under side without indumentum . **Fauriei.**
BB. Leaves oblanceolate, narrow for their length. Indumentum loosely woolly (somewhat agglutinate in *R. Metternichii*):
C. Truss rounded; rhachis and pedicels relatively short (Japanese species):
D. Leaves linear-lanceolate:
E. Calyx 5-7 mm. . . . . **Makinoi.**
EE. Calyx very short . . . . **yakusimanum.**
DD. Leaves oblong-oblanceolate: Calyx 2-3 mm:
E. Corolla 5-partite . . . . **Degronianum.**
EE. Corolla 7-partite . . . . **Metternichii.**
CC. Truss elongate; rhachis and pedicels long. (Caucasian and Western Chinese species):
D. Leaf apex rounded, no apiculus. Calyx 2-3 mm.; ovary tomentose . . . . . **Smirnowii.**
DD. Leaf apex rounded, distinct apiculus. Calyx 5-7 mm.; ovary glandular . . . . . **Ungernii.**
DDD. Leaf apex acute. Calyx 3-5 mm.; ovary glandular . . . . . **adenopodum.**

RHODODENDRON ADENOPODUM, *Franch.* in *Journ. de Bot.*, vol. 9 (1895), 391.

Illustration—

Habit : a bush 4-10 ft. high ; young shoots clad with a thin felty grey tomentum and more or less glandular with scattered glands.

Leaves : lamina oblong-lanceolate or oblong-oblanceolate, 10-20 cm. long, 2-5 cm. broad ; apex acute or acuminate ; base tapered, wedge-shaped ; upper surface dark green, smooth, at maturity glabrous or with vestiges of tomentum, midrib shallowly grooved, primary veins 12-14 on each side not conspicuous ; under surface clad with a loosely felty greyish to pale fawn bistrate tomentum with the hairs of which are mixed long-stalked glands more numerous near the prominent midrib, which is green, less felty, or almost glabrous, primary veins more or less concealed ; petiole 2-3 cm. long, clad like the young shoots, cylindric, not grooved.

Inflorescence : a loose racemose corymb of 6-8 flowers ; rhachis about 3-5 cm. long, fawn-tomentose.

Pedicels : 3-4 cm. long, glandular with long-stalked glands.

Calyx : split into 5 unequal ovate or pointed membranous lobes, glandular on the back and gland-ciliate, 3-5 mm. long.

Corolla : funnel-campanulate, 4 cm. long, pale rose, more or less spotted (*ex* Millais), puberulous within at the base, outside glabrous ; lobes 5, rounded, 1·5 cm. long, 2 cm. broad.

Stamens : 10, unequal, 2·5-3·5 cm. long ; filaments densely hairy over lower quarter.

Pistil : 4·5 cm. long ; ovary 5 mm. long, ovoid, densely clad with long-stalked glands which obscure a short non-glandular pubescence, 5-chambered ; style slender, glabrous.

Capsule : oblong cylindric, 1·5 cm. long, 7 mm. broad, glandular, 5-6-chambered, calyx persistent.

Habitat: Eastern Szechuan ; Hupeh. In thin woods at 5000-7000 ft. altitude.

This Chinese species finds its nearest kin in the Caucasus and Japan. It is not closely allied to any other known Chinese rhododendron. Its elongate inflorescence is equalled by few of the members of the subseries.

RHODODENDRON BRACHYCARPUM, *G. Don.* (Copied in part from *Bot. Mag.*, t. 7881.)

A. Flowering shoot (about $\frac{2}{3}$ natural size). B. Stamen. C. Pistil. D. Stigma (enlarged). E. Fruit.

RHODODENDRON BRACHYCARPUM, *D. Don ex G. Don* in *Gen. Syst.*, vol. 3 (1834), 843.

Illustration—*Bot. Mag.*, vol. 129 (1903), t. 7881.

Habit: a robust shrub of 6-10 ft.; very young shoots and unfolding leaves and petioles white-tomentose quickly becoming glabrous except on the leaf under side; one-year-old shoots stout bright green, below inflorescences about 7 mm. diameter.

Leaves: lamina oblong, oblong-elliptic, oblong-obovate, 7-15 cm. long, 3-7 cm. broad; apex blunt or rounded; base rounded to cuneate; margin slightly recurved; upper surface bright green, smooth, at maturity glabrous, midrib slightly grooved, pale green, primary veins about 16 on each side impressed; under surface clad with a thin felty pale-fawn or brownish indumentum, midrib prominently raised, primary veins slightly raised; petiole stout, about 1·5-2 cm. long, flattish and slightly grooved above, round below, at maturity glabrous or with vestiges of indumentum.

Inflorescence: a rounded elongate raceme of 10-20 flowers; rhachis 2-3 cm. long, finely pubescent, elongating considerably in fruit.

Pedicels: unequal, 2·5-4 cm. long, lengthening in fruit, sparsely tomentose.

Calyx: small, about 2 mm. long, with 5 obtuse teeth.

Corolla: broadly funnel-shaped, about 2·5 cm. long, creamy white flushed with pink along the median line of the petals and green spotted at the back, distinctly hairy within at the base of the tube; lobes 5, 1·5 cm. long, 1·5 cm. broad, rounded, emarginate.

Stamens: 10, 1·5-2·5 cm. long; filaments widened to the base and there hairy over about 8 mm. of their length.

Pistil: about 1·7 cm. long; ovary ovoid, rounded, 5-chambered, densely tawny-tomentose, 4 mm. long, 5-chambered; style shorter than stamens, glabrous, widened to the lobulate stigma.

Capsule: 2-3 cm. long, furrowed, becoming glabrescent.

Habitat: Japan. North and Central mountain regions.

In the subseries *R. brachycarpum* is well marked out by its indumentum, which strongly recalls that found in the Lacteum series—flecks of the small rosette hairs disintegrate readily in spirit. The very short style is a useful diagnostic character of this and its ally *R. Fauriei*.

RHODODENDRON CAUCASICUM, *Pallas* in *Flora Ross.*, vol. 1 (1784), 46.

Illustrations—*Fl. Ross.* (1784), t. 31 ; *Bot. Mag.*, vol. 28 (1808), t. 1145.

Habit : a shrub seldom more than 3 ft. high with thickish branches ; young shoots tomentose ; perulae more or less persistent.

Leaves : lamina ovate, obovate or oblong, 5-10 cm. long, 2-4 cm. broad ; apex obtuse, margin more or less recurved ; base wedge-shaped, somewhat decurrent on petiole ; upper surface dark green, glabrous at maturity, slightly rugulose, midrib grooved, primary veins impressed ; under surface clad with a thin fawn to tawny or pale rust tomentum, midrib prominent, primary veins somewhat obscure ; petiole stout, 1-1·5 cm. long, grooved above, tomentose like the shoots.

Inflorescence : a candelabroid truss of many flowers on long erect stalks, the bud-scales and bracts more or less persistent during flowering.

Pedicels : 4-5 cm. long, loosely woolly tomentose.

Calyx : small, about 2-3 mm. long, woolly like pedicel ; lobes 5, undulate to broadly triangular, unequal.

Corolla : broadly campanulate, 3-3·5 cm. long, tube about 1·5 cm. long, yellowish or tinted rose spotted within at the back, hairy within at base ; lobes 5, 1·5-2 cm. long, 2-2·4 cm. broad, oblong rounded, emarginate, waved.

Stamens : 10, unequal, 1·7-3 cm. long ; filaments white, hairy at base ; anthers pale yellow.

Pistil : 3·5-4 cm. long ; ovary stout, oblong, 6-7 mm. long, 3 mm. broad, densely white-tomentose, 5-chambered ; style straight, glabrous, pink, the colour a conspicuous feature in the pale yellow forms.

Capsule : oblong blunt, 1·5 cm. long, 5 mm. broad, straight or slightly curved, more or less ferrugineous tomentose, borne on erect stalks.

Habitat : Caucasus. At 6000-9000 ft. altitude.

The original description of this species indicated white to rose or purplish flowers. Plants in cultivation often show distinct yellow colouring. It shows very well the elongated inflorescence characteristic of the series Ponticum.

RHODODENDRON CHRYSANTHUM, *Pallas* in *Reisen durch verschiedne Provinz.*, vol. 3 (1776), 729.

(R. OFFICINALE, *Salisb.*)

ILLUSTRATION—*Flora Rossica* (1784), t. 30.

HABIT: a small alpine shrub of 6-12 in., prostrate or semi-prostrate, with short ascending branches; annual growth short with the perulae more or less persistent.

LEAVES: lamina broadly oblanceolate or obovate, 2·5-8 cm. long, 1-3·5 cm. broad; apex blunt or rounded, margin revolute; base narrowed cuneate or obtuse; upper surface dark green, glabrous, semi-rugulose, midrib, primary veins and vein reticulations deeply impressed; under surface pale green or fawn, at maturity glabrous except for vestiges of hairs on the prominent midrib and traces of a juvenile tomentum elsewhere on the lamina surface, vein reticulations conspicuous; petiole short, about 5 mm. long, grooved above, corrugated below and glabrescent with vestiges of juvenile tomentum.

INFLORESCENCE: an umbellate corymb of 5-8 flowers on erect stalks encased at the base in the persistent bud-scales and bracts; rhachis short, 1 cm. long.

PEDICELS: erect, rufescent hairy, about 3 cm. long.

CALYX: small, with obscure lobes, floccose.

COROLLA: widely campanulate, about 3 cm. long, yellow; lobes 5, unequal, the upper lobe largest and more or less spotted.

STAMENS: 10, unequal, shorter than style; filaments puberulous at the base.

PISTIL: 2·5-3 cm. long; ovary ovoid, rusty tomentose, 5-chambered: style slender, glabrous; stigma 5-lobulate.

CAPSULES: on erect stalks, oblong, 5-angled, 5-valved, slightly curved, sub-tomentose.

HABITAT: Siberian-Mongolian mountains and Manchuria southward to North and Central Japan.

This dwarf northern species with yellow flowers stands somewhat apart from the members of the subseries Caucasicum. Its nearest ally would appear to be *R. caucasicum* itself. An erect Japanese variety, var. *niko-montanum*, has been described by Komatsu and is accorded specific rank by Nakai in *Tokyo Bot. Mag.* (1917), 242, as *R. niko-montanum*, Nakai.

RHODODENDRON DEGRONIANUM, *Carrière* in *Revue Horticole*, vol. 40 (1869), 368.

(R. Metternichii, *Sieb. & Zucc.*, *var.* pentamerum, *Maxim.*; R. japonicum, *Schneid.*, *var.* pentamerum, *Hutch.*)

Illustrations – *Revue Hort.*, vol. 40 (1869), 368, fig. 77; *Bot. Mag.*, vol. 137 (1911), t. 8403.

Habit: a compact rounded bush of 3-4 ft. clad to the base with foliage; shoots below inflorescences about 5 mm. in diameter, sparsely floccose.

Leaves: lamina oblong or oblong-elliptic to obovate, broadest above the middle, 7-15 cm. long, 2-4 cm. broad; apex obtuse, curved downwards, margin recurved; base cuneate; upper surface deep green, glossy, glabrous at maturity (or with vestiges of juvenile tomentum), midrib deeply grooved, primary veins 10-12 on each side slightly raised; under surface clad with a thick bistrate felty fawn to rufous tomentum of branched hairs, with which are mixed scattered stalked glands, midrib very prominent, glabrescent, primary veins concealed; petiole 2-3 cm. long, grooved above, round below, floccose like young shoots.

Inflorescence: a racemose umbel of about 12 flowers; rhachis stout, 1·5 cm. long, greenish, floccose.

Pedicels: 2·5-3 cm. long, greenish or tinted pink, clad with whitish floccose hairs.

Calyx: small, 1-2 mm. long, with 5 triangular floccose teeth.

Corolla: widely funnel-campanulate, 3·5 cm. long, 4-5·5 cm. across, soft pink, with deep pink lines along the median costa of the petals, not spotted or very faintly spotted, puberulous inside at base; lobes 5, ovate to rounded, 1·5 cm. long, 2-2·5 cm. broad, crenulate, emarginate.

Stamens: 10, unequal, 1·7-3 cm. long; filaments white, puberulous over the lower 8 mm. of length; anthers pale yellow.

Pistil: 3·5 cm. long; ovary 5 mm. long, conoid, white-tomentose, 5-chambered; style white, glabrous, slightly curved towards the small greenish stigma.

Capsule:

Habitat: Japan.

This is the correct name for the plant usually grown in gardens as *R. Metternichii*. It is distinguished from *R. Metternichii* by its 5-partite corolla. *R. Degronianum* is the common species in Japan, whereas its ally seems to be comparatively rare.

RHODODENDRON FAURIEI, *Franch.* in *Bull. Soc. Philom. Paris*, ser. 7, vol. 10 (1883-1886), 143.

Illustration—

Habit : a shrub of 5-10 ft. ; year-old branches clad with a thin loose whitish-floccose tomentum, which is quickly detersile ; shoots below inflorescences about 5 mm. in diameter.

Leaves : lamina oblong-elliptic to obovate, 7-12 cm. long, 3-4 cm. broad ; apex rounded or obtuse ; base obtuse to rounded ; upper surface smooth, glabrous at maturity, midrib grooved, primary veins 12-15 on each side not conspicuous ; under surface pale green, glabrous, midrib prominent, primary veins hardly prominent ; petiole short, about 1-1·5 cm. long, grooved above, at first slightly floccose, soon glabrous.

Inflorescence : a raceme of 12-15 flowers ; rhachis 1·5-2 cm. long, puberulous.

Pedicels : 2·5 cm. long, slender, clad with a lax rufous tomentum quickly vanishing.

Calyx : small, about 2 mm. long ; lobes almost obsolete.

Corolla : funnel-campanulate, about 2·5 cm. long, white or yellowish, with a pinkish flush on the median lines of the petals, spotted inside with numerous green spots on the posterior side, glabrous outside, puberulous within at the base ; lobes 5, rounded, 1 cm. long, 1·3 cm. broad.

Stamens : 10, unequal, 1-1·5 cm. long ; filaments white, swollen towards the glabrous base, hairy for some distance above base.

Pistil : about 1·5 cm. long ; ovary ovoid, rounded or truncate, 5-chambered, about 3 mm. long, densely clad with white-tawny tomentum ; style greenish-white ; stigma small, orange.

Capsule :

Habitat : Japan.

This species is by some regarded as a variety of *R. brachycarpum*. It differs chiefly in the lack of indumentum on the under surface of the mature leaf.

RHODODENDRON HYPERYTHRUM, *Hayata* in *Icones Plant. Formos.*, vol. 3 (1913), 133.

(R. RUBROPUNCTATUM, *Hayata, non Léveillé.*)

ILLUSTRATION—

HABIT : a bush with stout glabrous branches.

LEAVES : lamina leathery, oblong to elliptic-oblong or elliptic-lanceolate, 7-12 cm. long, 2-3·5 cm. broad ; apex abruptly subacute or shortly acuminate ; base obtuse ; upper surface glabrous, midrib impressed, primary veins slightly impressed ; under surface dotted with reddish punctulations, midrib prominent, primary veins ascending-spreading, slightly raised ; petiole stout, 1·5-2·5 cm. long, glabrous, grooved above.

INFLORESCENCE : a racemose umbel of 10 or more flowers.

PEDICELS : ascending-spreading, 3-4·5 cm. long, sparingly glandular.

CALYX : saucer-shaped, with 5 small teeth, glandular and gland-fringed.

COROLLA : funnel-campanulate, 3-5 cm. long and broad, purple spotted ; lobes 5, broadly rounded, slightly emarginate.

STAMENS : 10, unequal, 2·5-4 cm. long, shorter than corolla ; filaments slender, flattened and densely pubescent at base.

PISTIL : as long as corolla (about 4-5 cm.) ; ovary ovoid, 6 mm. long, 5-furrowed, densely glandular ; style slender, curved, sparsely glandular in lower half ; stigma large, knob-like.

CAPSULE :

HABITAT : Formosa, Mt. Shichisei and central regions of the island.

The exact position of this species is uncertain. The describer puts it near *R. Morii*. The punctulations on the leaf under surface are peculiar but are not the flat glandular scales characteristic of the lepidote rhododendrons. It is in many ways anomalous.

RHODODENDRON MAKINOI, *Tagg, sp. nov.*

(R. STENOPHYLLUM, *Makino* in *Bot. Mag. Tokyo*, vol. 24 (1910), 99.)

ILLUSTRATION—

HABIT : in cultivation a rounded bush 3-7 ft. high, remarkable for the lateness (Aug.-Sept.) of the new annual growths and the curved sickle-like leaves ; young shoots, petioles and unfolding leaves clad with a white loosely-woolly tomentum which becomes tawny and persists for several years on the shoots, petioles and leaf under surface but falls from the leaf upper surface ; shoots below inflorescences about 7 mm. diameter.

LEAVES : lamina narrow-lanceolate, recurved, 7-17 cm. long, 1-2·5 cm. broad ; apex acute curved ; margin revolute ; base cuneate ; upper surface bright green, glabrous except in the deeply grooved midrib, primary veins 12-15 on each side impressed rendering the surface semi-bullate ; under surface, the raised midrib included, clad with a thick woolly-tawny indumentum ; petiole stout, about 1·5-2 cm. long, about 4 mm. broad, hardly grooved, densely tawny-woolly.

INFLORESCENCE : an umbel of about 6 flowers ; rhachis 2-3 mm. long, densely clothed with buff tomentum, bud-scales and bracts more or less persistent.

PEDICELS : about 3 cm. long, clothed with coarse strigose hairs.

CALYX : about 5-7 mm. long, clad like the pedicel ; lobes unequal, triangular to ligulate.

COROLLA : openly funnel-campanulate, 4 cm. long, 3·5-4 cm. across, soft pink, with or without crimson dots, finely puberulous within at base ; lobes 5, unequal, ovate to rounded, 1·5 cm. long, 1·5-2 cm. broad.

STAMENS : 10, unequal, 1·7-3·3 cm. long ; filaments white, the base puberulous over about 1 cm. of length ; anthers yellowish-white.

PISTIL : about 3·5 cm. long ; ovary conoid and oblong, blunt, about 5 mm. long, densely woolly-tomentose ; style white, glabrous, sharply curved near the small blunt stigma.

CAPSULE :

HABITAT : Japan.

This is a new name for a plant which has been in cultivation for some time but previously regarded as a very narrow-leaved variety of *R. Degronianum*. Makino described it as *R. stenophyllum*—a name already in use for a Bornean species. Makino's view as to its distinctiveness is correct. In habit, foliage characters, time of flowering and lateness of new growths, it contrasts strongly with *R. Degronianum*.

RHODODENDRON METTERNICHII, *Sieb. & Zucc.* in *Flora Japon.*, vol. 1 (1835), 23.

(R. JAPONICUM, *Schneid.*)

ILLUSTRATION—Sieb. & Zucc., *Flora Japon.*, vol. 1 (1835), t. 9.

HABIT: a shrub of about 3-8 ft.; shoots below inflorescences about 6 mm. diameter, thinly tomentose, leaves persisting 4-5 years sub-verticillate.

LEAVES: lamina leathery, oblong or oblong-oblanceolate, 10-15 cm. long, 2·5-4 cm. broad; apex acute; base gradually tapered to petiole, margin slightly recurved; upper surface glabrous at maturity, glossy, midrib grooved, primary veins about 14 on each side slightly impressed; under surface clad with a thinnish felty more or less agglutinate tawny or rust-coloured tomentum, midrib prominent, primary veins obscured; petiole grooved above, 2·5-3 cm. long, clad with a thin tomentum.

INFLORESCENCE: a racemose corymb of 10-15 flowers; rhachis 2 cm. long.

PEDICELS: about 3 cm. long, thinly tomentose.

CALYX: small, about 2-3 mm. long, cupular, with 7 small ovate sub-deltoid acute teeth, sparsely tomentose.

COROLLA: somewhat oblique-campanulate, 4 cm. long, rose, more or less spotted deeper within; lobes 7, ovate-subrounded, unequal, about 1·5 cm. long, 1·8 cm. broad, slightly emarginate.

STAMENS: 14, unequal, 1·5-3 cm. long; filaments slender, white, puberulous at base.

PISTIL: about 4·5 cm. long; ovary 5 mm. long, rusty tomentose, 7-chambered; style pale rose, glabrous.

CAPSULE:

HABITAT: Japan, Northern Alps.

This is noteworthy in the subseries by reason of its 7-partite flowers. The true plant is probably not in cultivation in Europe.

RHODODENDRON SMIRNOWII, *Traut.* in *Act. Hort. Petrop.*, vol. 9 (1886), 513.

Illustration—*Bot. Mag.*, vol. 122 (1896), t. 7495.

Habit : a broadly branched shrub of 4-6 ft. ; young shoots at first clothed with a white felty tomentum which may persist for a year or two, ultimately the branchlets are glabrescent ; perulae more or less persistent for some years.

Leaves : lamina leathery, oblong-obovate or oblanceolate, 6·5-15 cm. long, 2-3·5 cm. broad ; apex obtuse or semi-rounded ; margin recurved ; base tapered, wedge-shaped ; unfolding leaves white woolly tomentose all over with scattered glands among the tomentum ; upper surface soon becoming glabrous, somewhat rugulose, midrib grooved, primary veins 10 on each side impressed ; under surface at maturity clad with a persistent dense woolly tomentum becoming pale brown, which is present also on the broad midrib, primary veins obscure ; petiole 1-1·5 cm. long, at first clad with a white tomentum, later glabrescent.

Inflorescence : a lax corymb of 10-12 flowers, bud-scales and bracts more or less persistent during flowering ; rhachis 1·5 cm. long, tomentose.

Pedicels : 3-5 cm. long, densely clad with small subsessile glands and fewer floccose hairs.

Calyx : minute ; lobes 5, 2-3 mm. long, broadly ovate, obtuse, tomentose and glandular on the back.

Corolla : funnel-campanulate, about 4 cm. long, rose-purple, puberulous inside, glabrous outside ; lobes 5, 2 cm. long, 2·5 cm. broad, emarginate.

Stamens : 10, unequal, 2-3·5 cm. long ; filaments puberulous at base.

Pistil : 4 cm. long ; ovary 5 mm. long, cylindric, white-tomentose, 5-chambered ; style slender, glabrous.

Capsule : 1·5 cm. long, 5 mm. broad, oblong-cylindric, clad with silky pubescence, borne on elongated upright stalks.

Habitat : Caucasus.

This sturdy Caucasian species is well known in cultivation. Its nearest ally is *R. Ungernii*, from which it is distinguished by the tomentose ovary and the less apiculate leaf apex.

RHODODENDRON UNGERNII, *Traut.* in *Act. Hort. Petrop.*, vol. 9 (1886), 514.

Illustration—*Bot. Mag.*, vol. 136 (1910), t. 8332.

Habit : a shrub or small tree of 12-20 ft. ; young shoots white-tomentose, later glabrescent ; branches below inflorescences straight and stout, about 7 mm. in diameter.

Leaves : lamina thickly coriaceous, oblong-oblanceolate, 10-19 cm. long, 4-7 cm. broad ; apex rounded, apiculate ; base tapered, wedge-shaped ; upper surface dark green, at maturity glabrous, midrib impressed, primary veins 12-14 on each side impressed ; under surface clad with a grey to fawn dense woolly tomentum among the hairs of which are sparsely scattered long-stalked glands, midrib raised prominent, primary veins raised ; petiole 2-3 cm. long, stout, at first tomentose and glandular, later glabrous.

Inflorescence : a lax corymbose raceme of 20-30 flowers ; rhachis 3-4 cm. long, rufous-tomentose.

Pedicels : 3-4 cm. long, clad with stalked glands and fewer floccose hairs.

Calyx : 5-7 mm. long, split to near the base into 5 unequal lanceolate or narrowly ovate lobes, densely glandular on the back and gland-fringed.

Corolla : funnel-campanulate, 3·5 cm. long, pale rose with faint spotting, outside glabrous, puberulous within ; lobes 5, 1 cm. long, 1·5 cm. broad, rounded, slightly emarginate.

Stamens : 10-12, unequal, 2-3 cm. long ; filaments hairy at base.

Pistil : 3 cm. long ; ovary 5 mm. long, truncate, densely clad with stalked glands, 5-chambered ; style glabrous.

Capsule : 1·5 cm. long, 5-6 mm. broad, sub-cylindric borne on long erect stalks, roughened by withered glands, calyx more or less persistent.

Habitat : Caucasus.

This is distinguished from its nearest ally *R. Smirnowii* by the apiculus of the leaf apex and by the glandular ovary.

RHODODENDRON YAKUSIMANUM, *Nakai* in *Tokyo Bot. Mag.*, vol. 35, Nos. 409-420 (1921), 135.

ILLUSTRATION—Nakai in *Trees and Shrubs of Japan Proper*, vol. 1 (1927), 67.

HABIT: a shrub.

LEAVES: biennial, the young ones entirely fuscous-tomentose or fuscous-floccose but in autumn becoming almost glabrous above, below very densely fuscous-tomentose; lamina linear-oblanceolate or linear-oblong or oblanceolate or lanceolate, 5-7 cm. long.

PETIOLE: 1 cm. long.

FLOWERS: in a terminal corymb.

PEDICELS: fuscous-bearded.

CALYX: very short, fuscous-pubescent.

COROLLA: pale rose, with very broad rounded lobes.

STAMENS: 10; filaments glabrous.

CAPSULE: oblong-elliptic, fuscous-velvety.

HABITAT: Japan, Island Yakusima.

Material of this species is not in the meantime available, and the above description is based entirely on the original description in the *Tokyo Bot. Mag.* There is a figure of it in the book by Professor Nakai and Professor Koidzumi entitled *Trees and Shrubs Indigenous in Japan Proper*, vol. 1, page 67. It comes exceedingly near in its characters to *R. Makinoi*. Both are illustrated in the volume referred to, and the close kinship is apparent.

[While the above was in the press, specimens were received from Professor Nakai. These confirm the distinctness of the species and at the same time establish its affinity to *R. Makinoi* and *R. Degronianum*.]

PONTICUM SERIES

SUBSERIES PONTICUM

This subseries is represented by one species in South-Western Europe and Asia Minor and by three species in North America. Within the series Ponticum it is distinguished by the lack of indumentum on the mature leaves and by the soft leathery texture of the leaves. The general appearance of the well-known *R. ponticum* as regards habit and size of truss is repeated in the American species.

KEY TO THE SPECIES

A. Leaves broadest at middle, base rounded . **catawbiense.**
AA. Leaves broadest above middle, base cuneate:
B. Pedicels, calyx and ovary densely glandular.
Calyx large, 5 mm. . . . . **maximum.**
BB. Pedicels glabrous or pubescent (not glandular).
Calyx small, 1-2 mm:
C. Ovary glabrous, rarely glandular (not tomentose) **ponticum.**
CC. Ovary densely tomentose . . . **californicum.**

RHODODENDRON CALIFORNICUM, *Hook.* in *Bot. Mag.*, vol. 81 (1855).

(R. MACROPHYLLUM, *G. Don.*)

ILLUSTRATION—*Bot. Mag.*, vol. 81 (1855), t. 4863.

HABIT: a shrub 6-12 ft. with stout branches; the young shoots green; branches below inflorescences about 5 mm. diameter.

LEAVES: lamina oval, oblong-obovate or elliptic, 7-15 cm. long, 3-6 cm. broad; apex obtuse-acuminate; base tapered; upper surface at maturity dark green, glabrous, midrib grooved, primary veins about 14 on each side impressed; under surface paler, glabrous, midrib prominent, primary veins obscure; petiole 1-2 cm. long, grooved above.

INFLORESCENCE: a raceme of 20 or more flowers; rhachis about 2 cm. long.

PEDICELS: 3·5-5 cm. long, slender, glabrous or slightly pubescent.

CALYX: 1 mm. long; lobes 5, short and broadly triangular, the upper one sometimes long, almost subulate, slightly hairy.

COROLLA: broadly campanulate, 3-4 cm. long, rose, marked inside with yellowish spots on the upper side; lobes 5, oblong-rounded, waved at margin, about 2 cm. long.

STAMENS: 10, unequal, 1·5-2·5 cm. long; filaments deep rose, hairy at base; anthers deep pink.

PISTIL: 2·5-3 cm. long; ovary ovoid, about 5 mm. long, tomentose with long adpressed hairs, 5-chambered; style glabrous.

CAPSULE:

HABITAT: California. On mountains at 1500 ft. altitude.

American botanists regard this as the western representative of *R. catawbiense*. Its leaf base is cuneate, whereas in its ally the base of the lamina is well rounded. *R. macrophyllum G. Don*, is generally regarded as a form of this species with white and smaller flowers.

RHODODENDRON CATAWBIENSE, *Michaux* in *Fl. Bor. Am.*, vol. 1 (1803), 258.

Illustrations—*Bot. Mag.*, vol. 40 (1814), t. 1671 ; *Bot. Cab.*, pl. 1176.

Habit : a spreading shrub of 6-10 ft., generally broader than high ; branches below inflorescences almost 6 mm. in diameter ; young shoots and unfolding leaves tomentose, becoming glabrescent.

Leaves : lamina oblong-oval to oval, 7-15 cm. long, 3-5 cm. broad ; apex broadly obtuse ; base obtuse or rounded ; upper surface dark green, glossy, slightly rugulose, at maturity glabrous, midrib slightly impressed, primary veins about 16 on each side slightly impressed ; under surface pale green, to the eye glabrous but under magnification punctulate with tomentum vestiges, midrib prominent, sparsely floccose with hair vestiges ; petiole 2-3 cm. long, at first more or less woolly, later glabrescent.

Inflorescence : a racemose truss of 15-20 flowers ; rhachis 3-4 cm. long.

Pedicels : slender, 3-5 cm. long, more or less floccose.

Calyx : small, 1 mm. long, with 5 triangular undulate lobes, slightly floccose.

Corolla : funnel-campanulate, about 4 cm. long, lilac-purple, faintly spotted, puberulous inside at the throat, outside glabrous ; lobes 5, 2-2·5 cm. long, 2·5 cm. broad, oblong-rounded, more or less notched.

Stamens : 10, unequal, 2-3·5 cm. long, densely hairy towards the base.

Pistil : 4·5 cm. long ; ovary conoid, 4 mm. long, densely fawn to rufous tomentose ; style glabrous.

Capsules : clustered on elongated rhachis, stalks more or less erect, 4-5 cm. long, capsule oblong, about 2 cm. long, 4 mm. broad, more or less rusty tomentose, 5-chambered.

Habitat : United States of America ; Alleghanies. Slopes and summits of mountains forming dense thickets at 6000 ft. altitude.

This species has been in cultivation for over a century and sometimes reaches a very large size. It is distinguished readily from its immediate allies by the broad base to the leaf. Its ovary is tomentose in native specimens, but in cultivation the ovary often tends to be nearly glabrous or more or less glandular.

RHODODENDRON MAXIMUM, *Linn.* in *Sp. Pl.* (1753), 392.

(R. PROCERUM, *Salisb.*; R. PURPUREUM, *G. Don*; R. PURSHII, *G. Don.*)

ILLUSTRATIONS—Sargent's *Silva of North America*, vol. 5 (1893), t. 238; *Bot. Mag.*, vol. 24 (1806), t. 951.

HABIT: in cultivation a shrub of 4-12 ft. of loose habit, but in the wild state often becoming a tree; branchlets at first covered with ferruginous glandular hairs, later glabrous.

LEAVES: lamina leathery, ovate-lanceolate or obovate-lanceolate, 10-30 cm. long, 4-7 cm. broad; apex acute; base narrow wedge-shaped or semi-rounded; upper surface at maturity dark green, glabrous or with vestiges of tomentum, midrib grooved, primary veins 12-14 on each side slightly impressed; under surface paler, clad with a film-like more or less fugitive indumentum, midrib prominent, glandular, primary veins somewhat obscure; petiole stout, 2·5-4 cm. long, at first tomentose and glandular, finally more or less glabrous.

INFLORESCENCE: a corymb of 16-24 flowers.

PEDICELS: slender, about 2-3 cm. long (lengthening in fruit), glandular with short-stalked glands.

CALYX: light green, about 5 mm. long; lobes 5, unequal, oval, rounded or ligulate, puberulous, glandular and gland-fringed.

COROLLA: campanulate, about 3 cm. long, light rose, purplish or white, spotted yellow-green on the upper lobe, puberulous in the throat within and glandular outside towards the base, cleft to the middle or beyond into 5 oblong-oval rounded lobes.

STAMENS: 8-12, 1-2 cm. long; filaments flattened at base and there bearded with white hairs.

PISTIL: about 2·5 cm. long; ovary 4 mm. long, ovoid, green, glandular with short-stalked glands mixed with hairs; style slender, glabrous.

CAPSULES: dark red-brown, oblong-ovate, 1-1·5 cm. long, 5-chambered, borne in erect candelabroid clusters; rhachis and fruit stalks lengthening after flowering; calyx-lobes persisting.

HABITAT: North America, Nova Scotia and southward through New England, and along the Appalachian Mountains to North Georgia.

This species is much more glandular than its allies, and is moreover readily recognised by its larger calyx. It may be noted, too, that its leaves are generally larger than those of the other members of the subseries.

RHODODENDRON PONTICUM, *Linn.* in *Sp. Pl.*, ed. 2 (1762), 562.

Illustration—*Bot. Mag.*, vol. 18 (1803), t. 650.

Habit : a shrub up to 15 ft., usually much branched to the base ; shoots glabrous, those below inflorescences about 5 mm. in diameter.

Leaves : lamina oblong, oblong-lanceolate or oblanceolate, 10-15 cm. long, 3-5 cm. broad ; apex acute or obtuse ; base tapered, cuneate or rarely obtuse ; upper surface dark glossy green, smooth, glabrous ; under surface pale green, smooth, glabrous, midrib prominent, primary veins 12-16 on each side slightly raised ; petiole 1-2 cm. long, grooved above.

Inflorescence : a corymb of many flowers (10-15).

Pedicels : 3-3·5 cm. long, glabrous.

Calyx : small, about 3 mm. long with 5 small, shallow triangular teeth, glabrous.

Corolla : campanulate, 4-5 cm. long, lilac-purple or pink-purple, commonly marked with greenish-yellow spots on upper lobe, pubescent inside towards the base ; lobes oblong-rounded, 2-2·5 cm. long.

Stamens : 10, 2·5-3·5 cm. long ; filaments hairy at base.

Pistil : about 4 cm. long ; ovary 5 mm. long, glabrous ; style declinate glabrous, slightly exserted.

Capsule : oblong-cylindric, about 2 cm. long, 4 mm. broad, 5-chambered.

Habitat : Asia Minor, Caucasus and Armenia.

The typical plant comes from Asia Minor. The European representative from Spain and Portugal has been given the name of *R. baeticum*, but this is usually regarded as but a variety of the Pontine species. There are several garden forms of the species, the most divergent being perhaps that known as var. *cheiranthifolium* with small leaves wavy at the margin.

SALUENENSE SERIES

General Characters :—Low, often prostrate shrublets a few inches high ; branches scaly and often bristly. Leaves evergreen, densely scaly below, often fringed with hairs. Inflorescence terminal, 1-3-flowered. Flowers purplish-crimson or dark reddish-crimson. Calyx usually very large and often coloured, fringed with hairs, often scaly outside. Corolla wide-open from a short broad tube, usually scaly and pubescent outside. Stamens 10, exserted, villous towards the base. Ovary 5-celled, scaly ; style glabrous, fairly long. Capsule short, often enclosed by the persistent calyx.

Distribution :—North-Eastern Burma, South-Eastern Tibet, Yunnan, at very high altitudes.

A very distinct series showing a tendency towards certain of the *Lapponicum* group.

J. H.

SALUENENSE SERIES

KEY TO THE SPECIES

A. Calyx densely scaly outside :
  B. Leaves elliptic about twice as long as broad :
    C. Branchlets and usually flower-stalks densely bristly ; corolla densely scaly and pubescent outside **saluenense.**
    C. Branchlets and flower-stalks not bristly ; corolla shortly pubescent but not scaly outside :
      D. Leaves $\frac{3}{4}$ in. long ; flower-stalks 1 in. long ; calyx long-ciliate . . . . . **calostrotum.**
      D. Leaves $\frac{3}{4}$ in. long ; flower-stalks $\frac{1}{2}$ in. long ; calyx minutely ciliate . . . . . **riparium.**
      D. Leaves $\frac{1}{3}$ in. long ; flower-stalks $\frac{1}{2}$ in. long **calciphilum.**
    C. Branchlets and flower-stalks softly pubescent as well as scaly ; leaves very laxly scaly below, scales 2-3 times their own diameter apart . . . **fragariflorum.**
  B. Leaves narrowly oblanceolate, about 5 times as long as broad ; corolla densely scaly and pubescent outside **radicans.**
A. Calyx glabrous, hairy or bristly outside but not scaly, or only very slightly so :
  B. Calyx-lobes densely bristly outside . . . **charidotes.**
  B. Calyx-lobes glabrous or very shortly pubescent outside :
    C. Flower-stalks scaly but not bristly :
      D. Branchlets densely bristly ; leaves very shortly mucronate **cosmetum.**
      D. Branchlets not bristly ; leaves very long-mucronate **keleticum.**
    C. Flower-stalks bristly :
      D. Branches erect ; flower-stalks covered with long bristles and short soft hairs or scales ; corolla softly pubescent and slightly scaly outside . . . **chameunum.**
      D. Branches prostrate ; flower-stalks densely bristly and sparingly scaly ; corolla nearly glabrous outside **prostratum.**

RHODODENDRON CALCIPHILUM, *Hutch. & Ward, n. sp.*

Illustration—

Habit : prostrate shrublet ; branchlets covered with brown flaky scales but not bristly ; leaf-bud-scales early deciduous.

Leaves : elliptic, rounded at both ends, slightly mucronate, about $\frac{1}{3}$ in. long and $\frac{1}{4}$ in. broad, laxly scaly above, densely so below with uniform overlapping brown scales ; leaf-stalks densely scaly.

Inflorescence : terminal, 1-2-flowered ; flower-bud-scales soon falling off ; flower-stalks $\frac{1}{2}$ in. long, covered with small scales.

Flowers : rosy purple.

Calyx : well developed, $\frac{1}{6}$ in. long, lobes very broadly elliptic, densely covered with scales outside, fringed with short hairs.

Corolla : with a very short tube, about $\frac{1}{2}$-$\frac{2}{3}$ in. long, softly pubescent outside and with a few scales on the back of the lobes.

Stamens : 10, exserted, villous near the base.

Ovary : scaly ; style longer than the stamens, glabrous.

Capsule : $\frac{1}{6}$ in. long, densely scaly, not hidden by the calyx.

Habitat : Burma ; Seinghku Wang (28° 8′ N., 97° 24′ E.), 11,000-14,000 ft., apparently confined to limestone ; *Ward* 6984 (type) ; 6959 ; 7069 ; 7523.

RHODODENDRON CALOSTROTUM, *Balf. f. & Ward.*

Illustration—Stapf, *Bot. Mag.*, t. 9001 (1924).

Habit: small shrub up to 1 ft. high; branchlets densely scaly but not bristly; leaf-bud-scales early deciduous.

Leaves: obovate-elliptic, shortly mucronate, about 1 in. long and ½ in. broad, densely scaly above, with greenish scales, pale reddish below with very numerous flaky scales; leaf-stalks densely scaly.

Inflorescence: terminal, usually 2-flowered; flower-bud-scales early deciduous; flower-stalks about 1¼ in. long, scaly.

Flowers: bright reddish-purple.

Calyx: well developed, ¼ in. long, lobes broadly elliptic, ciliate, *densely scaly* outside except towards the margin.

Corolla: widely funnel-shaped, about 1 in. long, softly *pubescent* outside but not scaly.

Stamens: 10, exserted, villous near the base.

Ovary: scaly; style glabrous or slightly pilose near the base.

Capsule: ¼ in. long, densely scaly, hidden by the persistent calyx.

Habitat: North-Eastern Burma, 11,000-12,000 ft.

RHODODENDRON CHAMEUNUM, *Balf. f. & Forrest.*

(R. COLOBODES, *Balf. f.*; R. SERICOCALYX, *Balf. f.*)

ILLUSTRATION—

HABIT: shrub; branchlets densely scaly and bristly; leaf-bud-scales subpersistent.

LEAVES: oblong-elliptic, mucronate, $\frac{1}{2}$ in. long, $\frac{1}{4}$ in. broad, glossy and soon glabrous above except the midrib, densely scaly below, the scales overlapping, pale brown; leaf-stalks $\frac{1}{12}$ in. long, scaly and ciliate.

INFLORESCENCE: terminal, 2-3-flowered; flower-bud-scales early deciduous; flower-stalks $\frac{1}{3}$ in. long, covered with long bristly and short soft hairs or scales.

FLOWERS: deep purple-rose with crimson markings.

CALYX: well developed, $\frac{1}{6}$ in. long, lobes oblong-elliptic, ciliate, shortly and softly *pubescent* outside but not scaly.

COROLLA: 1 in. long, widely funnel-shaped, softly *pubescent* and slightly scaly all over the outside, the lobes minutely toothed.

STAMENS: 10, exserted, villous near the base.

OVARY: shortly tomentose; style glabrous.

CAPSULE: $\frac{1}{4}$ in. long, scaly, hidden by the calyx.

HABITAT: Western Yunnan, Li-ti-ping, open stony pasture, 11,500 ft.

RHODODENDRON CHARIDOTES, *Balf. f. & Farrer.*

Illustration—

Habit : dwarf shrublet a few inches high ; branchlets scaly and sparingly bristly ; leaf-bud-scales subpersistent.

Leaves : narrowly oblong-elliptic, very mucronate, about $\frac{1}{2}$ in. long, $\frac{1}{4}$ in. broad, soon glabrous and glossy above, densely covered with small brown scales below, bristly-ciliate on the margin ; leaf-stalks bristly.

Inflorescence : terminal, 1-2-flowered ; flower-bud-scales subpersistent ; flower-stalks $\frac{2}{3}$ in. long, bristly with weak hairs and scaly.

Flowers : magenta-crimson.

Calyx : large, $\frac{1}{4}$ in. long, lobes broadly ovate, *ciliate* and *densely bristly outside* but not scaly.

Corolla : widely funnel-shaped, $\frac{3}{4}$ in. long, softly pubescent outside and densely scaly.

Stamens : 10, short, villous at the base.

Ovary : scaly ; style glabrous.

Capsule :

Habitat : North-Eastern Burma, Chawchi Pass, 10,000 ft.

RHODODENDRON COSMETUM, *Balf. f. & Forrest.*

(R. PAMPROTUM, *Balf. f. & Forrest*; R. HUMIFUSUM, *Balf. f.*)

ILLUSTRATION—

HABIT: shrub 1-2 ft. high; branchlets densely bristly and scaly; leaf-bud-scales early deciduous.

LEAVES: oblong-elliptic or oblanceolate, mucronate, $\frac{1}{2}$-$\frac{3}{4}$ in. long, $\frac{1}{4}$-$\frac{1}{3}$ in. broad, slightly scaly above, densely so below, the scales pale greenish-brown, mostly ciliate on the margin; leaf-stalks bristly.

INFLORESCENCE: terminal, 2-3-flowered; flower-bud-scales early deciduous; flower-stalks $\frac{1}{3}$ in. long, scaly, but hardly bristly.

FLOWERS: purple-rose.

CALYX: bright crimson, large, $\frac{1}{3}$ in. long, lobes ovate-lanceolate, shortly ciliate, *not scaly* outside.

COROLLA: widely funnel-shaped, $\frac{3}{4}$-1 in. long, thinly *pubescent* outside.

STAMENS: 10, exserted, villous near the base.

OVARY: scaly; style glabrous.

CAPSULE: $\frac{1}{6}$ in. long, scaly.

HABITAT: Yunnan, Chungtien Plateau and Bei-ma-Shan, 11,000-12,000 ft., in rocky pastures.

RHODODENDRON FRAGARIFLORUM, *Ward.*

Illustration—

Habit : woody shrublet forming carpets not over 6 in. high ; branchlets softly and shortly pubescent and with a few scales, leaf-bud-scales early deciduous.

Leaves : strongly aromatic, elliptic-obovate, rounded at the apex and slightly mucronate, $\frac{1}{2}$ in. long, $\frac{1}{4}$ in. broad, loosely covered with large golden scales above, very laxly scaly below, the scales orange-red and 2-3 times their own diameter apart ; leaf-stalks only very slightly scaly.

Inflorescence : terminal, 3-4-flowered ; flower-bud-scales soon falling off ; flower-stalks $\frac{1}{3}$ in. long, loosely scaly and minutely pubescent.

Flowers : crushed-strawberry coloured, slightly fragrant.

Calyx : well developed, $\frac{1}{6}$ in. long, lobes elliptic, scaly outside and on the margin.

Corolla : widely and very shortly tubular, nearly $\frac{3}{4}$ in. long, glabrous outside.

Stamens : 10, exserted, densely pubescent well above the base.

Ovary : scaly ; style well exserted above the stamens, glabrous.

Capsule : $\frac{1}{4}$ in. long, loosely scaly.

Habitat : Southern Tibet ; Temo La, 15,000 ft., and Nyima La, 14,000-15,000 ft., *Ward* 5810 (type) ; 5734.

RHODODENDRON NITENS, *Hutchinson* in *Gard. Chron.*, xcix. (1936), 10.

Illustration—

Habit : low, much-branched, flat-topped shrublet about 0·35 m. high ; branchlets short and twiggy, the older ones dark and densely scabrid with the remains of scales ; one-year-old shoots covered with small stalked glands ; leaf-bud-scales deciduous.

Leaves : oblong-elliptic, rounded and mucronate at the apex, shortly narrowed at the base, 0·8-1·3 cm. long, 5-6 mm. broad, shining above and dotted with gland-like scales, very densely lepidote below with yellowish-brown, uniform, very small, overlapping scales, bristly on the margin when young ; petiole 2 mm. long.

Inflorescence : 2-flowered, terminal, the bud-scales semi-persistent and gradually evolved from the upper leaves ; inner bud-scales minutely and softly downy outside, ciliate ; stalks 2-2·5 cm. long, loosely scaly.

Flowers : deep pink-magenta, speckled with reddish-crimson.

Calyx : large and foliaceous, about 7 mm., densely lepidote outside ; lobes ovate, densely ciliate.

Corolla : tube broad, short, almost flat broad limb about 4·5 cm. across ; tube and lobes softly pubescent, lobes lepidote outside.

Stamens : 10, much shorter than the style ; filaments densely villous near the base.

Pistil : ovary 5-celled, densely lepidote ; style deep crimson, glabrous, nearly as long as corolla ; stigma green.

Capsule :

Habitat : originally described from a cultivated specimen at Tower Court, Ascot, 30th June 1935, from K. Ward's seed, No. 5482.

RHODODENDRON KELETICUM, *Balf. f. & Forrest.*

Illustration—

Habit : a semi-prostrate shrublet up to 6 in. high ; branchlets not bristly, scaly when young ; leaf-bud-scales subpersistent.

Leaves : obovate-elliptic, very mucronate, $\frac{1}{2}$ in. long, $\frac{1}{4}$ in. broad, glabrous above, weakly ciliate, densely scaly below ; leaf-stalks scaly.

Inflorescence : terminal, 1-2-flowered ; flower-bud-scales subpersistent ; flower-stalks $\frac{3}{4}$ in. long, scaly.

Flowers : deep purplish-crimson with darker markings.

Calyx : well developed, $\frac{1}{3}$ in. long, lobes broadly ovate, ciliate, *glabrous* or *slightly scaly* near the middle.

Corolla : widely funnel-shaped, $\frac{2}{3}$ in. long, pubescent and scaly outside.

Stamens : 10, exserted, pubescent towards the base.

Ovary ; scaly ; style pubescent.

Capsule : very short, enclosed by the persistent calyx.

Habitat : South-Eastern Tibet ; Salween—Kiu chiang Divide, open peaty and stony pasture and on cliffs.

RHODODENDRON PROSTRATUM, *W. W. Sm.*

ILLUSTRATION—Hutchinson in *Bot. Mag.*, t. 8747 (1918).

HABIT : low shrublet with prostrate branches up to 4 in. high ; branchlets bristly ; leaf-bud-scales early deciduous.

LEAVES : broadly oblong-elliptic, mucronate, $\frac{2}{3}$-$\frac{3}{4}$ in. long, $\frac{1}{4}$-$\frac{1}{3}$ in. broad, at first ciliate with weak hairs, glossy and reticulate above, densely scaly below, with brown scales ; leaf-stalks ciliate.

INFLORESCENCE : terminal, 1-3-flowered ; flower-stalks $\frac{1}{2}$-$\frac{3}{4}$ in. long, densely bristly and sparingly scaly.

FLOWERS : pink-violet, slightly spotted with red.

CALYX : very large, $\frac{1}{3}$ in. long, crimson or greenish, lobes broadly elliptic, weakly ciliate, *glabrous* outside.

COROLLA : $\frac{3}{4}$ in. long, widely funnel-shaped, *nearly glabrous* outside.

STAMENS : 10, exserted, long-pilose near the base.

OVARY : scaly ; style glabrous.

CAPSULE : $\frac{1}{3}$ in. long, scaly.

HABITAT : Yunnan, Lichiang Range, 15,000-16,000 ft., on rocks and in moist peaty soil.

RHODODENDRON RADICANS, *Balf. f. & Forrest.*

Illustration—

Habit : prostrate shrublet 2-4 in. high ; branchlets nearly glabrous, leaf-bud-scales persistent.

Leaves : narrowly oblanceolate, very mucronate, $\frac{1}{2}$ in. long, $\frac{1}{6}$ in. broad, weakly ciliate, very laxly scaly above, densely so below, leaf-stalks scaly.

Inflorescence : terminal, 1-flowered ; flower-stalks $\frac{1}{2}$ in. long, scaly.

Flowers : purple.

Calyx : well developed, $\frac{1}{6}$ in. long, lobes ovate-lanceolate, weakly ciliate, *scaly* outside.

Corolla : widely tubular, $\frac{3}{4}$ in. long, *pubescent and scaly* outside.

Stamens : 10, shortly exserted, villous near the base.

Ovary : scaly ; style glabrous.

Capsule : $\frac{1}{6}$ in. long, densely scaly, hidden by the persistent calyx-lobes.

Habitat : South-Eastern Tibet, Tsarong, 14,000-15,000 ft., on open stony moorland.

RHODODENDRON RIPARIUM, *Ward.*

(R. RIVULARE, *Ward*, not of *Hand. Mazz.*)

ILLUSTRATION—

HABIT: undershrub 1-1½ ft. high; branchlets densely covered with dry flaky stalked scales.

LEAVES: elliptic or oblong-elliptic, rounded at both ends, with a small reflexed mucro at the apex, about ¾ in. long and ½ in. broad, thinly scaly above, very densely so below with dry uniform light brown scales; leaf-stalks densely scaly.

INFLORESCENCE: terminal, 2-4-flowered; flower-bud-scales subpersistent; flower-stalks ½ in. long, rather loosely scaly.

FLOWERS: bright purple, with darker spots on the upper lobe.

CALYX: well developed, ¼ in. long, lobes red, ovate-elliptic, finely ciliate, mostly with rather numerous small scales outside, glabrous towards the margin.

COROLLA: about 1 in. long, thinly and softly pubescent outside, and with numerous scales on the back of the lobes.

STAMENS: 10, long-exserted, villous near the base.

OVARY: densely scaly; style red, longer than the stamens, glabrous.

CAPSULE: ⅓ in. long, densely scaly, a little longer than the persistent calyx-lobes.

HABITAT: Southern Tibet; Doshong La, 10,000-11,000 ft., *Ward* 5828 (type); north of the Tsangpo, 12,000-13,000 ft., *Ward* 6087; Doshong La, *Ward* 6224. North Burma: Seinghku Wang, 11,000-12,000 ft., *Ward* 6903; 7061; 7062; 7553. Assam: Mishmi Hills, 11,000-12,000 ft., *Ward* 8229.

RHODODENDRON SALUENENSE, *Franch.*

(R. AMAUROPHYLLUM, *Balf. f. & Forrest*; R. HUMICOLA, *Wilding*)

ILLUSTRATION—Stapf, *Bot. Mag.*, t. 9095 (1926).

HABIT: shrub about 2 ft. high; branchlets scaly and densely bristly; leaf-bud-scales subpersistent.

LEAVES: evergreen, oblong-elliptic, mucronate, about 1 in. long and ½ in. broad, loosely scaly and shining above, very densely scaly below, the scales small and overlapping; leaf-stalks bristly.

RHODODENDRON SALUENENSE, *Franch.* Flowers deep purple crimson with darker markings.

A. Calyx and pistil. B. Corolla. C. Scales from leaf.
(Adapted from *Bot. Mag.*)

INFLORESCENCE: terminal, 2-3-flowered; flower-bud-scales subpersistent; flower-stalks ⅓ in. long, scaly.

FLOWERS: deep purple-crimson with darker markings.

CALYX: large, ⅓ in. long, lobes ovate-elliptic, fringed with hairs and tinged with red, *scaly* towards the middle.

COROLLA: widely campanulate, about 1 in. long, densely scaly and softly *pubescent* outside.

STAMENS: 10, exserted, densely villous near the base.

OVARY: scaly; style glabrous, purple.

CAPSULE: ½ in. long, scaly.

HABITAT: North-Western Yunnan, 12,000-13,000 ft., on cliffs and boulders.

SCABRIFOLIUM SERIES

General Characters :—Small shrubs up to 8 ft. high ; branchlets pubescent or bristly. Leaves evergreen, more or less lanceolate, usually softly pubescent and scaly below. Inflorescence axillary towards the apex of the shoots. Flowers varying from white to pink or crimson. Calyx well developed. Corolla narrowly tubular, 5-lobed, glabrous or scaly outside. Stamens 8-10, exserted, pubescent or glabrous. Ovary densely scaly and often pubescent or tomentose ; style glabrous or pubescent. Capsule short.

Distribution :—Yunnan and South-Western Szechuan, up to 12,000 ft.

A small group closely allied to the *Virgatum* series, but much more pubescent.

J. H.

KEY TO THE SPECIES

A. Corolla widely funnel-shaped ; stamens pubescent towards base :
  B. Calyx well developed :
    C. Leaves 1½-2 in. long, reticulate below ; flower-stalks densely bristly ; style pubescent . . . **scabrifolium.**
    C. Leaves ¾ in. long, densely villous on both surfaces ; flower-stalks pubescent and scaly :
      D. Style glabrous . . . . . **pubescens.**
      D. Style pubescent . . . . . **spiciferum.**
  B. Calyx cupular, not lobed :
    C. Leaves glaucous below, the scales about their own diameter apart ; style glabrous . . . **hemitrichotum.**
    C. Leaves not glaucous below, the scales 2-3 times their own diameter apart ; style pubescent in the lower half **mollicomum.**
A. Corolla tubular, contracted at each end ; stamens glabrous **spinuliferum.**

RHODODENDRON HEMITRICHOTUM, *Balf. f. & Forrest.*

Illustration—*Journ. R. Hort. Soc.*, 48 : p. 64, f. 23 (1923).

Habit : shrub 2-3 ft. high ; branchlets twiggy, softly pubescent, the leaf-bud-scales early deciduous.

Leaves : oblanceolate, acute, about 1 in. long and $\frac{1}{4}$ in. broad, softly pubescent above, glaucous below and densely scaly, the scales about their own diameter apart ; leaf-stalks $\frac{1}{12}$ in. long, softly pubescent.

Inflorescence : axillary, crowded near the apex of the shoot, 1-2-flowered, the bud-scales persistent during flowering ; flower-stalks $\frac{1}{8}$ in. long, scaly.

Flowers : pale rose, deeper on the margin.

Calyx : *shortly cupular*, not lobed, densely scaly on the outside.

Corolla : widely funnel-shaped, loosely scaly outside the lobes.

Stamens : 8, shortly exserted, pubescent towards the base.

Ovary : densely scaly, style slender, glabrous.

Capsule :

Habitat : South-Western Szechuan, Mu-li Mountains, 12,000 ft., in open rocky pasture.

RHODODENDRON MOLLICOMUM, *Balf. f. & W. W. Smith.*

Illustration—

Habit : small shrub ; branchlets softly pubescent, the leaf-bud-scales early deciduous.

Leaves : narrowly lanceolate, $1\frac{1}{4}$ in. long, $\frac{1}{3}$ in. broad, softly pubescent on both surfaces, scaly below, the scales very lax and 2-3 times their own diameter apart, the lateral nerves distinct below, not glaucous ; leaf-stalks $\frac{1}{12}$ in. long, pubescent.

Inflorescence : as in *R. hemitrichotum* ; bud-scales persistent during fruiting ; flower-stalks $\frac{1}{4}$ in. long, pubescent.

Flowers : crimson.

Calyx : shortly cupular, not lobed, scaly and pubescent outside.

Corolla : *narrowly tubular*, slightly pubescent but not scaly outside.

Stamens : 8, exserted, pubescent towards the base.

Ovary : pubescent and scaly ; style pubescent in lower half.

Capsule : $\frac{1}{3}$ in. long, pubescent and scaly.

Habitat : Yunnan, on mountains north-east of the Yangtze bend, 10,000-11,000 ft., in open thickets.

RHODODENDRON PUBESCENS, *Balf. f. & Forrest.*

Illustration—

Habit : shrub 3-4 ft. high ; branchlets long-pilose and shortly pubescent, the leaf-bud-scales early deciduous.

Leaves : narrowly lanceolate, acute, $\frac{3}{4}$ in. long, densely villous on both surfaces, also scaly below, the scales lax ; leaf-stalks $\frac{1}{12}$ in. long, villous.

Inflorescence : axillary towards the apex of the shoot, 1-flowered ; bud-scales subpersistent ; flower-stalks $\frac{1}{4}$ in. long, pubescent and scaly.

Flowers :

Calyx : *well developed*, deeply 5-lobed, lobes densely ciliate, with long hairs.

Corolla : $\frac{1}{2}$-$\frac{2}{3}$ in. long, slightly scaly on the back of the lobes.

Stamens : 8-10, exserted, pubescent in the lower part.

Ovary : scaly and pubescent ; style glabrous.

Capsule : $\frac{1}{4}$ in. long, pubescent and scaly.

Habitat : South-Western Szechuan, Mu-li Mountains, 10,000 ft., in thickets and amongst scrub.

RHODODENDRON SCABRIFOLIUM, *Franch.*

ILLUSTRATION—Hook. f. in *Bot. Mag.*, t. 7159 (1891).

HABIT : small shrub ; branchlets bristly, with long hairs and softly pubescent ; the leaf-bud-scales deciduous.

LEAVES : broadly oblanceolate, very acute, 1½-2 in. long, ⅔-¾ in. broad, scabrid and rather bullate above, softly tomentose and reticulate below, also with small scattered glands ; leaf-stalks ¼ in. long, bristly hairy.

RHODODENDRON SCABRIFOLIUM, *Franch.* Flowers pink or white.
A. Portion of leaf. B. Stamen. C. Calyx and pistil.
(Adapted from *Bot. Mag.*)

INFLORESCENCE : axillary in the upper leaves, 2-3-flowered ; bud-scales persistent during flowering ; flower-stalks densely bristly, ½ in. long.

FLOWERS : pink or white.

CALYX : *well developed*, lobes ⅙ in. long, densely bristly all over.

COROLLA : narrowly tubular, about ¾ in. long, slightly scaly on the back of the lobes.

STAMENS : 10, exserted, slightly pubescent towards the base.

OVARY : densely hairy and scaly ; style shortly pubescent near the base.

CAPSULE : ¼ in. long, softly pubescent and glandular.

HABITAT : Yunnan, 5000-7000 ft.

RHODODENDRON SPICIFERUM, *Franch.*

Illustration—

Habit : small shrub ; branchlets bristly and pubescent, the leaf-bud-scales early deciduous.

Leaves : narrowly oblanceolate, acute, 1 in. long, bristly, with slender hairs above and on the margin, softly pubescent below, also scaly ; leaf-stalks $\frac{1}{12}$ in. long, pubescent.

Inflorescence : axillary towards the apex of the shoots, numerous and forming a pseudo-spike ; bud-scales persistent during flowering, markedly glandular and shortly villous ; flower-stalks $\frac{1}{4}$ in. long.

Flowers : pink.

Calyx : *well developed*, lobes densely ciliate, scaly outside.

Corolla : narrowly tubular, $\frac{1}{2}$ in. long, loosely scaly on the back of the lobes.

Stamens : 10, exserted, slightly pubescent towards the base.

Ovary : densely hairy and glandular ; style pubescent towards the base.

Capsule : $\frac{1}{4}$ in. long, scaly and shortly pubescent.

Habitat : Yunnan.

RHODODENDRON SPINULIFERUM, *Franch.*

(R. Duclouxii, *Lévl.*)

Illustration—Craib in *Bot. Mag.*, t. 8408 (1911).

Habit : shrub up to 8 ft. high ; branchlets softly pubescent, the leaf-bud-scales early deciduous.

Leaves : oblanceolate to obovate, acutely acuminate, 2-3 in. long, $\frac{1}{2}$-$1\frac{1}{2}$ in. broad, bullate above, strongly reticulate below, softly pubescent and loosely glandular-scaly ; leaf-stalks $\frac{1}{3}$ in. long, pubescent.

Inflorescence : axillary towards the apex of the shoots ; flower-bud-scales early deciduous ; flower-stalks $\frac{1}{4}$ in. long, softly pubescent.

Flowers : crimson-red.

Calyx : rather obsolete, not lobed, densely pubescent.

Corolla : *tubular*, contracted at each end, 1 in. long, glabrous outside.

Stamens : 10, exserted, glabrous.

Ovary : densely tomentose ; style glabrous.

Capsule :

Habitat : Yunnan, 6000-8000 ft., in shady thickets.

SERIES SEMIBARBATUM

This series contains only one species and is characterised by the flowers being produced solitary from lateral buds crowded below the terminal vegetative bud, by the small rotate corolla with 5 very unequal stamens and deciduous generally elliptic crenulate and nearly glabrous leaves. The heteromorphous stamens, three being as long as the corolla with glabrous or nearly glabrous filaments and with large oblong anthers, and two half as long with densely pilose filaments and much smaller globose-ovoid anthers, constitute a character unique in the genus.

The series is most closely related to the Ovatum series, which differs chiefly in the larger flowers with 5 subequal stamens and entire persistent leaves.

A. R.

RHODODENDRON SEMIBARBATUM, *Maximowicz.*

A. Flowering shoot. B and C. Stamens. D. Fruit. E. Flower. F. Pistil. G. Apex of leaf.

RHODODENDRON SEMIBARBATUM, *Maximowicz* in *Bull. Acad. Sci. St. Pétersb.*, vol. 15, 229 (1870); in *Mél. Biol.*, vol. 7, 338 (1871).

(Syn.: AZALEA SEMIBARBATA, *Kuntze*; AZALEASTRUM SEMIBARBATUM, *Makino*; MUMEAZALEA SEMIBARBATA, *Makino*.)

ILLUSTRATION—Stapf in *Bot. Mag.*, t. 9147 (1928).

HABIT: upright shrub 2-10 ft. tall, with irregularly whorled slender spreading branches; shoots pubescent and glandular-pilose, glabrescent the second year, later glabrous and yellowish grey or grey to dark red-brown.

FLORAL WINTER-BUDS: lateral, crowded at the end of the branchlets below the terminal vegetative one, oblong-ovoid, pointed, light brown, glabrous, with 9-12 white-ciliolate, rounded or obtuse and mucronulate scales, the lower orbicular-ovate, the upper oblong.

LEAVES: deciduous, thinly chartaceous, elliptic to elliptic-ovate to elliptic-oblong, $\frac{3}{4}$-2 in. long and $\frac{1}{3}$ to nearly 1 in. wide, obtuse or even slightly emarginate or sometimes acutish, mucronate, broad-cuneate or sometimes nearly rounded at base, minutely crenulate with bristle-tipped serrations, dark green above and glabrous except the short-villous midrib, lighter green beneath and glabrous except the pubescent and usually sparingly setose midrib, also the lateral veins usually sparingly setose, turning yellow, orange and crimson in autumn; petiole slender, $\frac{1}{6}$-$\frac{1}{3}$ in. long, densely short-pubescent and furnished with scattered long setose gland-tipped hairs.

INFLORESCENCE: 1-flowered, from lateral buds crowded at the end of the branchlets; flowers after the unfolding of the leaves; pedicels about $\frac{1}{6}$ in. long, pubescent and glandular-pilose.

CALYX: with small ovate lobes about $\frac{1}{12}$ in. long, pubescent and glandular-setose.

COROLLA: rotate-funnelform, about $\frac{3}{4}$ in. across, yellowish-white or white, flushed pink, dotted red at the base of the lobes, with short and wide ovoid tube about $\frac{1}{4}$ in. long and spreading or slightly recurved obovate to broad-oblong lobes much longer than the tube, glabrous.

STAMENS: 5, very unequal, the 3 lower ones spreading, about as long as the corolla-lobes, with the filaments glabrous or only slightly pilose at base and oblong anthers, the two upper ones about half as long, with the filaments densely pilose nearly to the apex and much smaller globose-ovoid anthers.

PISTIL: shorter than the longer stamens; ovary subglobose, glandular-setose, glabrous at base; style glabrous, curved at apex.

CAPSULE: globose-ovoid, about $\frac{1}{6}$ in. long, glandular-setose, viscid.

HABITAT: central and southern Japan, chiefly in the mountains.

A very distinct species but with rather insignificant flowers, which, moreover, are partly hidden by the foliage, as in *R. nipponicum*.

STAMINEUM SERIES

General Characters :—Shrubs or trees up to 40 ft. high ; branchlets glabrous or bristly. Leaves evergreen, not scaly. Inflorescence axillary, each 1- to several-flowered, flower-bud-scales usually persistent. Flowers white, rose or red, often fragrant. Calyx obsolete. Corolla narrowly funnel-shaped, 5-lobed, never scaly outside. Stamens 10, exserted, pubescent or rarely glabrous. Ovary glabrous or rarely tomentose ; style glabrous, as long or longer than the stamens. Capsule rather long, often beaked.

Distribution :—Burma to Hupeh, Southern China and Formosa, mainly at lower altitudes.

A very distinct series closely allied to the *Ovatum* series, but with a very rudimentary calyx and always 10 stamens.

J. H.

STAMINEUM SERIES

KEY TO THE SPECIES

A. Flower-stalks glabrous or very slightly hairy:
B. Ovary glabrous:
C. Flower-bud-scales softly puberulous or silky outside:
D. Each inflorescence several-flowered; flowers white, yellow within . . . . . **oxyphyllum.**
D. Each inflorescence 1-flowered; flowers purplish-rose, greenish-yellow within . . . . . **stenaulum.**
C. Flower-bud-scales glabrous except on the margin:
D. Inflorescence several-flowered:
E. Stamens much longer than the corolla **stamineum.**
E. Stamens about as long as, or shorter than, the corolla:
F. Stamens pubescent:
Flowers lilac . . . . **Westlandii.**
Flowers red . . . . **moulmainense.**
F. Stamens glabrous . . . . **leucobotrys.**
D. Inflorescence 1-2-flowered:
E. Leaves elliptic; flower-bud-scales not ciliate; stamens pubescent . . . . . **Wilsonae.**
E. Leaves oblong or oblanceolate:
F. Lower bud-scales not ciliate; flowers violet-rose; stamens glabrous. . . . . **Esquirolii.**
F. Lower bud-scales ciliate; stamens pubescent:
G. Bud-scales margined with short hairs **leiopodum.**
G. Bud-scales margined with minute glands **Latoucheae.**
B. Ovary tomentose:
C. Midrib glabrous below:
D. Leaves oblanceolate with obscure lateral nerves; inflorescence about 3-flowered . . **Cavaleriei.**
D. Leaves obovate with distinct lateral nerves; inflorescence 1-flowered . . . . . **Hancockii.**
C. Midrib shortly bristly below; inflorescence 1-flowered; leaves narrowly oblanceolate . . . **Tutcherae.**

A. Flower-stalks densely villous or bristly-pilose:
B. Leaves glabrous; calyx obsolete . . . **Henryi.**
B. Leaves bristly on both surfaces; calyx-lobes variable, up to $\frac{1}{2}$ in. long . . . . . **Championae.**
Imperfectly known species . . . . **Feddei,** *Levl.*

RHODODENDRON CAVALERIEI, *Lévl.*

Illustration—

Habit : shrub 6-9 ft. high ; branchlets glabrous.

Leaves : oblanceolate, gradually acute at both ends, 3 in. long, 1 in. broad, glabrous, very obscurely nerved ; leaf-stalks $\frac{1}{3}$ in. long.

Inflorescence : subumbellate, *about 3-flowered,* flower-stalks slender, 1 in. long, slightly pubescent.

Flowers : white to rose.

Calyx : obsolete, glabrous.

Corolla : narrowly funnel-shaped, $1\frac{1}{4}$ in. long, glabrous outside.

Stamens : 10, exserted, glabrous.

Ovary : tomentose ; style glabrous.

Capsule : 2 in. long, slightly puberulous.

Habitat : Kweichow ; Pin-fa.

RHODODENDRON CHAMPIONAE, *Hook.*

Illustration—*Bot. Mag.*, t. 4609 (1851).

Habit : shrub ; branchlets bristly with stiff hairs.

Leaves : oblong-oblanceolate, acutely acuminate, shortly cuneate at the base, 3-6 in. long, 1-2 in. broad, shortly bristly on the upper surface especially towards the margin, *loosely bristly* below and often pubescent, with numerous lateral nerves ; leaf-stalks $\frac{1}{2}$ in. long, very bristly.

Inflorescence : axillary, *several-flowered* ; flower-stalks very densely villous, $\frac{3}{4}$ in. long.

Flowers : pink.

Calyx : very variable, *deeply lobed*, lobes linear-oblong, up to $\frac{1}{2}$ in. long, densely ciliate.

Corolla : narrowly funnel-shaped, $2\frac{1}{2}$ in. long, glabrous.

Stamens : 10, long-exserted, pubescent in the lower half.

Ovary : very densely bristly ; style longer than the stamens, glabrous.

Capsule : $1\frac{1}{2}$ in. long, scabrid.

Habitat : Hong-Kong, Mount Victoria, rare ; probably also in the Province of Fokien, Southern China.

RHODODENDRON ESQUIROLII, *Lévl.*

Illustration—

Habit : shrub, branchlets glabrous.

Leaves : oblong-lanceolate, acutely acuminate, $1\frac{1}{2}$-$2\frac{1}{2}$ in. long, $\frac{1}{2}$-$\frac{3}{4}$ in. broad, glabrous, with several pairs of much reticulate lateral nerves markedly impressed on the upper surface but obscure below ; leaf-stalks $\frac{1}{4}$ in. long.

Inflorescence : axillary, 1-2-flowered, the lower bud-scales not ciliate, glabrous and shining on the outside ; flower-stalks $\frac{1}{2}$ in. long, glabrous.

Flowers : rose-violet.

Calyx : obsolete, glabrous.

Corolla : about 1 in. long, glabrous.

Stamens : 10, shorter than the corolla, glabrous.

Ovary and Style : glabrous.

Capsule :

Habitat : Yunnan, near to Gan-chouen.

RHODODENDRON HANCOCKII, *Hemsl.*

Illustration—Hemsl. in *Hook. Icon. Plant.*, t. 2381 (1898).

Habit : shrub 3-6 ft. high ; branchlets glabrous.

Leaves : obovate, acutely acuminate, narrowed to the base, 4-6 in. long, $1\frac{1}{4}$-$2\frac{1}{2}$ in. broad, glabrous, with numerous fairly distinct much-branched lateral nerves, slightly impressed above ; leaf-stalks $\frac{1}{4}$ in. long.

Inflorescence : axillary, *1-flowered*, the bud-scales subpersistent, numerous, very shortly ciliate.

Flowers : white, the upper corolla-lobe tinged with yellow.

Calyx : small, deeply 5-lobed, lobes ovate, hairy on the back and margin.

Corolla : widely funnel-shaped, 3 in. long, deeply 5-lobed, lobes obovate-elliptic ; tube glabrous outside.

Stamens : 10, long-exserted, pubescent in the lower half.

Ovary : 5-6-celled, densely tomentose ; style glabrous, slightly longer than the stamens with a broad disk-like stigma.

Capsule : curved and beaked, $2\frac{1}{2}$ in. long, slightly pubescent.

Habitat : Southern Yunnan, woods around Mengtze, 5000-6000 ft.

RHODODENDRON HENRYI, *Hance.*

(R. Dunnii, *Wils.*)

Illustration—

Habit : shrub, branchlets glabrous.

Leaves : elliptic-obovate, acutely acuminate, cuneate at the base, 2-4 in. long, 1-1½ in. broad, glabrous, with several much-branched lateral nerves ; leaf-stalks ½ in. long, glabrous.

Inflorescence : axillary, *3-4-flowered* ; flower-stalks densely bristly-pilose.

Flowers : pink.

Calyx : obsolete, undulately-lobed.

Corolla : narrowly funnel-shaped, 1½ in. long, glabrous.

Stamens : 10, exserted, pubescent in the lower third.

Ovary and Style : glabrous.

Capsule :

Habitat : Kwantung.

RHODODENDRON LATOUCHEAE, *Franch.*

Illustration—

Habit : shrub ; branchlets glabrous.

Leaves : oblanceolate, acutely acuminate, about 3 in. long and 1 in. broad, glabrous, inconspicuously nerved ; leaf-stalks $\frac{3}{4}$ in. long, glabrous.

Inflorescence : axillary, *1-flowered* ; bud-scales glabrous outside, fringed with minute glands ; flower-stalks 1 in. long, glabrous.

Flowers :

Calyx : obsolete.

Corolla : narrowly funnel-shaped, $1\frac{3}{4}$ in. long, glabrous outside.

Stamens : 10, long-exserted, shortly pubescent above the base.

Ovary : glabrous ; style slightly longer than the stamens, glabrous.

Capsule :

Habitat : mountains round Kuatun.

RHODODENDRON LEIOPODUM, *Hayata.*

Illustration—

Habit : shrub ; branchlets glabrous.

Leaves : whorled, narrowly oblong-lanceolate, acutely acuminate, 3-5 in. long, $\frac{3}{4}$-$1\frac{1}{4}$ in. broad, with numerous much-branched reticulate lateral nerves impressed above, glabrous ; leaf-stalks $\frac{1}{2}$ in. long.

Inflorescence : axillary, *1-flowered*, the bud-scales shortly puberulous on the margin ; flower-stalks $\frac{3}{4}$ in. long, glabrous.

Flowers : varying from pink to white.

Calyx : obsolete, with triangular glabrous lobes.

Corolla : rather narrowly funnel-shaped, $1\frac{3}{4}$ in. long, glabrous.

Stamens : 10, pubescent below the middle, exserted.

Ovary : long, glabrous ; style longer than the stamens, glabrous.

Capsule :

Habitat : Formosa, rocky mountain sides.

RHODODENDRON LEUCOBOTRYS, *Ridley*.

ILLUSTRATION—

HABIT : shrub ; branchlets glabrous.

LEAVES : obovate-elliptic, acutely acuminate, cuneate at the base, 3-6 in. long, 1-2½ in. broad, glabrous, with 9-10 pairs of rather obscure lateral nerves impressed above, slightly prominent below ; leaf-stalks ¼-½ in. long, slightly winged.

INFLORESCENCE : axillary, *several-flowered*, the bud-scales nearly glabrous outside and shortly ciliate on the margin ; flower-stalks ¾ in. long, glabrous.

FLOWERS : white.

CALYX : obsolete, undulately lobed, glabrous.

COROLLA : narrowly funnel-shaped, 1½ in. long, glabrous.

STAMENS : 10, shorter than the corolla, glabrous.

OVARY AND STYLE : glabrous.

CAPSULE :

HABITAT : Kedah Peak, 2800-4000 ft.

RHODODENDRON MOULMAINENSE, *Hook.*

(R. SIAMENSE, *Diels* ; R. KLOSSII, *Ridley*.)

ILLUSTRATION—*Bot. Mag.*, t. 4904 (1856).

HABIT : shrub ; branchlets glabrous.

LEAVES : elliptic-lanceolate, acute at both ends, 2½-4 in. long, 1-1½ in. broad, glabrous, with about 9-12 pairs of lateral nerves prominent on the lower surface ; leaf-stalks ½ in. long, slightly winged.

INFLORESCENCE : axillary, *3-5-flowered*, the bud-scales glabrous outside, but shortly ciliate on the margin ; flower-stalks 1 in. long, glabrous.

FLOWERS : red.

CALYX : obsolete, undulately lobed, glabrous.

COROLLA : narrowly funnel-shaped, 1½ in. long, 5-lobed, glabrous.

STAMENS : 10, nearly as long as the corolla, pubescent in the lower half.

OVARY AND STYLE : glabrous.

CAPSULE : 1 in. long, ribbed, tipped by the persistent style.

HABITAT : Burma, about 5000 ft. ; Siam, on the Doi-Sutep Mt. ; Malay Peninsula : Pahang.

RHODODENDRON OXYPHYLLUM, *Franch.*

Illustration—*Gard. Chron.*, 70 : p. 74 (1921).

Habit : shrub or small tree up to 15 ft. high ; branchlets glabrous.

Leaves : oblong-oblanceolate, acutely acuminate, shortly cuneate at the base, 3½-5 in. long, 1-2 in. broad, glabrous, with numerous rather faint lateral nerves ; leaf-stalks ½ in. long, glabrous.

Inflorescence : axillary, *several-flowered* ; bud-scales densely silky outside ; flower-stalks ¾ in. long, glabrous.

Flowers : white, with yellow inside the corolla.

Calyx : obsolete, undulate, glabrous.

Corolla : tubular-funnel-shaped, 2 in. long, glabrous.

Stamens : 10, pubescent in the lower half, shortly exserted.

Ovary and Style : glabrous.

Capsule : 1½ in. long, beaked by the long persistent style.

Habitat : Southern Yunnan, about 5000 ft. ; Siam, Doi-Sutep Mt., 3500 ft.

Rhododendron stamineum, *Franch.* Flowers white with yellow blotch.
A. Calyx and pistil. B. Stamen. C. Anther. D. Cross-section of ovary.
E. Capsule. (Adapted from *Bot. Mag.*)

RHODODENDRON STAMINEUM, *Franch.*

(R. CHAFFANJONII, *Lévl.*)

ILLUSTRATION—Hutchinson in *Bot. Mag.*, t. 8601 (1915).

HABIT : shrub ; branchlets glabrous.

LEAVES : whorled, obovate-oblanceolate, acutely and long-acuminate, cuneate at the base, about 3-4 in. long, 1-1½ in. broad, glabrous, with rather obscure lateral nerves ; leaf-stalks ⅓ in. long, glabrous.

INFLORESCENCE : axillary, *several-flowered*, the bud-scales nearly glabrous except on the margin ; flower-stalks ½-¾ in. long, glabrous.

FLOWERS : rose.

CALYX : obsolete, with broad triangular lobes, glabrous.

COROLLA : narrowly tubular, about 1 in. long, with 5 narrow lobes, glabrous.

STAMENS : 10, long-exserted, slightly pubescent.

OVARY AND STYLE : long, glabrous.

CAPSULE : 1½ in. long, beaked, ribbed, glabrous.

HABITAT : Yunnan, Szechuan, Hupeh and Kweichow.

RHODODENDRON STENAULUM, *Balf. f. & W. W. Sm.*

(R. Mackenzianum, *G. Forrest.*)

Illustration—*Gard. Chron.*, 81, p. 193 (1927).

Habit : shrub up to 16 ft. high ; branchlets glabrous, pale grey.

Leaves : oblong-lanceolate, acutely and rather long-acuminate, very shortly narrowed at the base, 3-5 in. long, 1-1½ in. broad, glabrous, with numerous reticulate lateral nerves not impressed on the upper surface ; leaf-stalks ½ in. long.

Inflorescence : axillary, *1-flowered*, the bud-scales persistent and softly puberulous outside ; flower-stalks ¾ in. long, glabrous.

Flowers : fragrant, soft purplish-rose with a greenish-yellow blotch on the inside towards the base.

Calyx : obsolete, undulately lobed, glabrous.

Corolla : narrowly funnel-shaped, 2 in. long, glabrous.

Stamens : 10, nearly glabrous, rather short.

Ovary : long, glabrous ; style much longer than the stamens, glabrous.

Capsule :

Habitat : Western Yunnan, Shweli—Salween Divide, 9000 ft., in thickets in mixed forest.

RHODODENDRON TUTCHERAE, *Hemsl. & E. H. Wils.*

Illustration—

Habit : tree 40 ft. high ; branchlets bristly, with long stiff hairs.

Leaves : narrowly oblanceolate, gradually acuminate, narrowed to the base, 3-4 in. long, $\frac{2}{3}$-1 in. broad, shortly setulose on the lower surface, especially on the midrib, with numerous distinct lateral nerves ; leaf-stalks very bristly, $\frac{1}{2}$ in. long.

Inflorescence : axillary and terminal, *1-flowered* ; flower-stalks $\frac{2}{3}$ in. long, glabrous or slightly pilose.

Flowers : violet.

Calyx : obsolete, slightly dentate, glabrous.

Corolla : narrowly funnel-shaped, 5-lobed, $1\frac{1}{2}$ in. long, glabrous outside.

Stamens : 10, exserted, pubescent towards the base.

Ovary : tomentose ; style glabrous, as long as the stamens.

Capsule :

Habitat : Southern Yunnan, Mengtze, in forests at 6000 ft.

RHODODENDRON WESTLANDII, *Hemsl.*

Illustration—

Habit : shrub or small tree up to 20 ft. high ; branchlets glabrous.

Leaves : broadly oblanceolate, acutely acuminate, shortly cuneate at the base, $2\frac{1}{2}$-5 in. long, 1 $1\frac{1}{2}$ in. broad, glabrous, with numerous lateral nerves impressed above ; leaf-stalks $\frac{1}{2}$ in. long, glabrous.

Inflorescence : axillary, *several-flowered*, the bud-scales glabrous except on the margin ; flower-stalks $\frac{3}{4}$ in. long, glabrous.

Flowers : sweetly scented, lilac.

Calyx : obsolete, undulately lobed, glabrous.

Corolla : narrowly funnel-shaped, glabrous.

Stamens : 10, pubescent between the middle and the base.

Ovary : long, glabrous ; style glabrous.

Capsule :

Habitat : Lantao Island, near Hong-Kong, 2500 ft.

RHODODENDRON WILSONAE, *Hemsl. & E. H. Wils.*

Illustration—

Habit : shrub 4-6 ft. high ; branchlets glabrous.

Leaves : whorled, narrowly elliptic, subacutely acuminate, $2\frac{1}{2}$-4 in. long, 1-$1\frac{3}{4}$ in. broad, glabrous, about 12 pairs of lateral nerves markedly impressed on the upper surface and slightly prominent below ; leaf-stalks $\frac{1}{3}$-$\frac{1}{2}$ in. long.

Inflorescence : axillary and terminal, *1-flowered*, the bud-scales persistent and quite glabrous ; flower-stalks $\frac{3}{4}$ in. long, glabrous.

Flowers :

Calyx : obsolete, with short triangular lobes, glabrous.

Corolla : widely funnel-shaped, $1\frac{1}{2}$ in. long, 5-lobed, glabrous.

Stamens : 10, exserted, pubescent towards the base.

Ovary : long, glabrous ; style a little longer than the stamens, glabrous.

Capsule : 1 in. long, smooth.

Habitat : Western Hupeh, woods 5000-6000 ft., rare.

TALIENSE SERIES

This large series is centred in the three western provinces of China (Yunnan, Szechuan and Kansu) and adjacent parts of Tibet and Burma. It falls quite naturally into four subseries. Three of these are readily distinguished *inter se* by the character of the calyx and ovary. The fourth subseries (Roxieanum) consists chiefly of subalpines of somewhat peculiar habit, with congested foliage, persistent perulae, and constricted inflorescences. The outstanding character of the series is the dense woolly to felty indumentum, usually red to tawny at maturity, rarely white and then of a thick spongy nature. In a few species the indumentum becomes thin and scurfy. Certain other series have a conspicuous and somewhat similar indumentum and must be carefully distinguished from Taliense. Closely allied is the consistently eglandular series Lacteum where the indumentum is usually thin and never woolly. Several members of the Neriiflorum series such as *R. haematodes* have a dense woolly indumentum, but their fleshy unspotted corollas among other characters readily separates them from the thin-textured spotted or blotched flowers of the present series.

The series Arboreum, especially in its subseries Argyrophyllum, touches somewhat on Taliense, but in the subseries Argyrophyllum the indumentum is usually white and of a plastered or crustaceous character and there is a tendency to an elongated inflorescence, whereas in Taliense the rhachis is always abbreviated.

The short rhachis serves also to distinguish the Taliense series from the Chrysanthum-Metternichii group which touch on the subseries Wasonii. The Chrysanthum-Metternichii group is, however, closely allied to the Taliense series and lines of demarcation are difficult to define. The same difficulty applies to the Campanulatum series, centred in the Himalaya. These related series, occupying distinct territories, have many characters in common. The members of the Chrysanthum-Metternichii group and of the Campanulatum series that are in cultivation present specific features of easy recognition, although definite characters to separate them from the members of the Taliense series in its widest sense are not easily formulated.

H. F. T.

TALIENSE SERIES

KEY TO THE SUBSERIES

A. Medium-sized shrubs, neither dwarf nor prostrate.
Leaves broad in proportion to length, sometimes narrow in subseries Adenogynum, which, however, has a distinctive calyx.
Perulae deciduous:
B. Calyx minute, eglandular; ovary glabrous or sub-glabrous, eglandular . . . . . **Taliense.**
BB. Calyx small, eglandular; ovary densely tomentose, eglandular . . . . . **Wasonii**
BBB. Calyx usually large, fringed with conspicuous stalked glands; ovary always more or less glandular **Adenogynum.**

AA. Chiefly dwarf species.
Leaves usually narrow, more or less pointed, margin generally revolute.
Perulae generally persistent.
Calyx usually small, not conspicuously gland-fringed; ovary glandular or tomentose, rarely glabrous **Roxieanum.**

TALIENSE SERIES

SUBSERIES ADENOGYNUM

The subseries Adenogynum is readily distinguished from the allied subseries by the relatively large calyx fringed by very distinct glands and by the ovary being always more or less glandular. The species of the subseries show a close general relationship with the rest of the Taliense series. In their geographical distribution they are confined to Yunnan and Szechuan.

The tendency to glandulosity is not confined to the calyx and ovary but is found in varying degrees on other parts—style, petiole and leaf. The prominence of glands serves to distinguish the subseries readily from the subseries Wasonii and from the whole of the Lacteum series. The glands which may be found in some species of the subseries Taliense are generally very obscure. *R. Roxieanum* and its allies differ widely from most of the members of this subseries in habit and in inflorescence apart from calyx characters. *R. detersile* and *R. codonanthum* suggest, however, an approximation to the Roxieanum subseries. There is undoubtedly a link between this subseries and certain aberrant members of the subseries Selense (series Thomsonii)—see introduction to that subseries.

The subseries shows four sections. *R. Bureavii* and its immediate allies are unmistakable in their general appearance. *R. detersile* and *R. codonanthum* are both anomalous. The latter is the only yellow-flowered member of the subseries. The other two sections (A and AA of the key), and those the more important, are readily divisible by the leaf character as indicated by the key, but the two are very closely akin, while the two sections first mentioned are much more divergent.

KEY TO THE SPECIES

A. Leaves narrow lanceolate or oblanceolate, 6-14 cm. long; indumentum dense, spongy, tawny-olive to cinnamon :
  B. Calyx large, 1-2 cm. long, style glandular :
    C. Leaf upper surface and petiole eglandular **adenogynum.**
    CC. Leaf upper surface and petiole glandular **adenophorum.**
  BB. Calyx small, 1-2 mm. long, style glabrous . **alutaceum.**

KEY TO SPECIES OF **ADENOGYNUM** SUBSERIES—*Contd.*

AA. Leaves ovate-oval to ovate-lanceolate, 5-14 cm. long; indumentum thin or dense, colour varied but not red :
B. Indumentum thin or plastered :
C. Leaves oblong-elliptic, 7-12 cm. long, apex blunt; indumentum thin, detersile; calyx 3-4 mm. long; style glandular over lower three-quarters . . **detonsum.**
CC. Leaves broadly ovate, 8-14 cm. long, apex acuminate; indumentum thin, detersile; calyx 6-8 mm. long; style glabrous or glandular at base . . **Prattii.**
CCC. Leaves ovate-lanceolate, 5-8 cm. long, apex pointed; indumentum plastered; calyx 8-10 mm. long; style glandular over lower third . **Balfourianum.**
BB. Indumentum more or less dense :
C. Calyx about 1 cm. long :
D. Indumentum loose, woolly without pellicle :
E. Style glandular at base . . . . **wuense.**
EE. Style glabrous; pedicels and ovary glandular only :
F. Branchlets woolly . . . . . **Faberi.**
FF. Branchlets glandular . . . . **dumicola.**
EEE. Style glabrous; pedicels and ovary hairy and glandular . . . . . **Faberioides.**
DD. Indumentum spongy with pellicle **Balfourianum,** var. **aganniphoides.**
CC. Calyx 2-3 mm. long :
D. Indumentum woolly detersile, petioles tomentose **mimetes.**
DD. Indumentum spongy, splitting, persistent; petioles subglabrous . . . **mimetes,** var. **simulans.**
AAA. Leaves elliptic to lanceolate, 6-14 cm. long, 2-5 cm. broad; indumentum bright rusty-red, persistent; shoots and petioles very woolly :
B. Calyx 5 mm. long, lobes thick, fleshy . . **cruentum.**
BB. Calyx about 1 cm. long, lobes membranous :
C. Leaves narrow-elliptic or lanceolate, 1·5-3 cm. broad, acute; ovary glandular, not woolly . **elegantulum.**
CC. Leaves oblong-oval, 4-5 cm. broad, shortly acuminate; ovary glandular, not woolly . . **Bureavioides.**
CCC. Leaves broadly elliptic, 3-5 cm. broad, tapered acuminate; ovary both glandular and woolly . **Bureavii.**
AAAA. Leaves small for the series, 3-6 cm. long, 1-2 cm. broad, oblanceolate or narrow-elliptic; indumentum rufous-brown, loosely woolly, patchy, more or less detersile :
B. Petiole densely woolly, eglandular; corolla red; style glabrous . . . . . **detersile.**
BB. Petiole sparsely woolly and glandular; corolla yellow; style glandular to the tip . . . **codonanthum.**

RHODODENDRON ADENOGYNUM, *Diels*. (Original drawing.)

A. Foliage and foliage-bud. B. Section of leaf showing woolly under surface. C. Pistil, calyx removed. D. Section of ovary. E. Corolla, calyx and pedicel. F. Base of leaf showing midrib.

All slightly reduced except D, which is enlarged.

RHODODENDRON ADENOGYNUM, *Diels* in *Notes R.B.G. Edin.*, vol. 5 (1912), 216.

Illustration—

Habit: a shrub of 9 ft.; year-old branches about 7 mm. in diameter, bright green, clad with vestiges of hairs.

Leaves: lamina leathery, oblong-ovate to oblong-lanceolate, 5-12 cm. long, 2-4 cm. broad; apex tapered acute or acuminate; base rounded, somewhat cordulate; upper surface convex, dark green, rugulose, glabrous, but with vestiges of juvenile hairs in the grooved midrib, eglandular, primary veins about 14 on each side grooved; under surface covered by a thick woolly, tawny-olive indumentum, midrib prominent, rest of venation concealed; petiole thick, 2 cm. long, glabrescent, eglandular.

Inflorescence: a terminal umbel of about 12 flowers; rhachis tomentose.

Pedicels: 1·5-3 cm. long, densely glandular and tomentose, pale reddish.

Calyx: large, about 1·5 cm. long, cut to base into 5 unequal yellowish-green oblong or elliptic lobes, clad with clavate-stalked glands and gland-ciliate.

Corolla: fleshy, funnel-campanulate, white shaded rose at base or with a magenta tint, marked with many crimson spots, 4·5 cm. long; lobes 5, about 2 cm. long, 2·5 cm. broad, rounded, emarginate, crenulate.

Stamens: 10, unequal, 2-3·5 cm. long; filaments white, pubescent at base.

Pistil: about 3·5 cm. long; ovary 5 mm. long, ovoid, grooved, 5-6-chambered, densely glandular; style densely glandular over lower third of length.

Capsule: oblong-oval, 1-1·5 cm. long, 8 mm. broad, deeply grooved, surrounded by persistent calyx.

Habitat: North-Western Yunnan; eastern flank of the Lichiang Range. Scattered over grassy mountain slopes in small clumps, at 11,000-12,000 ft. altitude.

R. adenogynum is the centre of a section in the subseries – section A of key—which is characterised by the possession of a very elongate pointed leaf with a dense brownish-olive woolly under-felt.

RHODODENDRON ADENOPHORUM, *Balf. f. & W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 9 (1916), 211.

Illustration—

Habit : a shrub of 4-8 ft. high ; young shoots about 5 mm. in diameter, clad with a dense woolly tomentum mixed with glands.

Leaves : lamina thick, leathery, lanceolate or oblong-lanceolate, 6-10 cm. long, 2-4 cm. broad ; apex acuminate or acute ; base rounded or cordulate ; upper surface at first tomentose and glandular, at maturity glabrescent, midrib deeply grooved, primary veins about 14 on each side grooved ; under surface clad with a thick cinnamon or fulvous woolly tomentum which covers an under stratum of small glands, midrib prominent, rest of venation concealed by indumentum ; petiole about 2 cm. long, tomentose and glandular.

Inflorescence : umbellate, about 10-flowered ; rhachis about 1 cm. long, tomentose and glandular.

Pedicels : about 2 cm. long, densely glandular and tomentose.

Calyx : about 1·5 cm. long, cut almost to the base into 5 lobes ; lobes oblong, elliptic, about 5 mm. broad, glandular on the back and fringed with glands.

Corolla : funnel-shaped, about 3·5 cm. long, rose with a few crimson markings ; lobes 5, rounded, emarginate.

Stamens : 10, 2-3 cm. long ; filaments pubescent at base.

Pistil : 3·5 cm. long ; ovary conoid, 7 mm. long, densely clad with stalked glands ; style glandular over lower third, glabrous above.

Capsule : straight, about 2 cm. long, 7 mm. broad, clad with vestiges of the ovary glands.

Habitat : Mid Yunnan ; mountains of the Chungtien Plateau. Open situations on rocks, stony pastures, ledges of limestone cliffs and margins of pine forests, at 12,000 ft. altitude.

R. adenophorum is closely allied to *R. adenogynum* but is a more glandular species.

RHODODENDRON ALUTACEUM, *Balf. f. & W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 10 (1917), 81.

Illustration—

Habit : a shrub of 12-14 ft. ; shoots one year old about 8 mm. in diameter, densely woolly-tomentose.

Leaves : lamina thick, leathery, oblong or broadly lanceolate, 8-14 cm. long, 2-3·5 cm. broad ; apex acute or shortly acuminate ; base obtuse or rounded and cordulate ; upper surface at maturity glabrescent, that of young leaves whitish-floccose and glandular, midrib grooved, primary veins about 15 on each side not conspicuous ; under surface thickly clad with a dull buff woolly tomentum, the hairs in the young leaf mixed with glands, midrib raised, the rest of venation concealed ; petiole 1-1·5 cm. long, at first tomentose like the shoots.

Inflorescence : a racemose umbel of about 12 flowers ; rhachis about 1·8 cm. long, sparsely-floccose and glandular.

Pedicels : 2 cm. long, glandular and floccose.

Calyx : minute, with an undulate lobed margin with a few glands.

Corolla : funnel-campanulate, 3·5 cm. long, rose spotted crimson and blotched at base ; lobes 5, 1·5 cm. long, 2 cm. broad, rounded, emarginate.

Stamens : 10, 1·2 cm. long ; filaments pubescent at base.

Pistil : about 2·8 cm. long ; ovary ovoid-conoid, 6 mm. long, glandular ; style glabrous, hardly expanded below the small stigma.

Capsule :

Habitat : North-Western Yunnan ; Kari Pass, Mekong—Yangtze Divide. In open thickets at 12,000 ft. altitude.

R. alutaceum is in appearance very like *R. adenogynum* and *R. adenophorum* but lacks the large calyx of those two species.

RHODODENDRON BALFOURIANUM, *Diels* in *Notes R.B.G. Edin.*, vol. 5 (1912), 214.

Illustration—

Habit: a shrub 4-8 ft. high; branches below inflorescences 7 mm. in diameter, glabrescent with vestiges of hairs and glands.

Leaves: lamina leathery, ovate or oblong-elliptic, 5-8 cm. long, 2·5-3·5 cm. broad; apex acute or acuminate; base obtuse, rounded or cordulate; upper surface mat, glabrescent with vestiges of hairs in the grooved midrib, minutely rugulose, primary veins about 12 on each side impressed; under surface pale cinnamon or fawn clad with a uniform crustaceous semi-agglutinate indumentum, the surface somewhat silky, midrib prominent, rest of venation concealed; petiole 1-2 cm. long, glabrescent, with vestiges of hairs and glands.

Pedicels: 2-3 cm. long, densely clad with stalked glands and with fewer hairs.

Calyx: about 1 cm. long, split almost to the base into 5 oval elliptic lobes with rounded apices, glandular on the back and fringed with glands.

Corolla: funnel-campanulate, about 4 cm. long, pale rose with crimson markings; lobes 5, about 1·5 cm. long, 2 cm. broad, deeply notched.

Stamens: 10, unequal, 2-3 cm. long, hairy at the base.

Pistil: 3·5-4 cm. long; ovary ovoid, with rounded apex, densely glandular; style glandular over the lower third of length, glabrous above the glandular area.

Capsule:

Habitat: Western Yunnan; Tali Range. Rocky open mountain meadows or open rhododendron forest, at 11,000-12,000 ft. altitude.

This species as regards calyx and corolla is quite of the *R. adenogynum* type. It differs from that species and its allies in the broader leaf with a plastered indumentum, very unlike the loose wool of *R. adenogynum*. This indumentum may vary to a spongy type with a surface pellicle recalling *R. aganniphum*; such forms come under the varietal name, var. *aganniphoides*.

RHODODENDRON BUREAVII, *Franch.* in *Bull. Soc. Bot. Fr.*, vol. 34 (1887), 281.

Illustration—

Habit : a small tree or shrub of 6 ft. ; branches one year old about 7 mm. in diameter, clad with a thick rusty-red indumentum of hairs mixed with glands.

Leaves : lamina thick leathery, ovate or broadly elliptic, 6-12 cm. long, 2·5-5 cm. broad ; apex broadly acuminate ; base obtuse or rounded ; upper surface slightly rugulose, glabrous at maturity, midrib grooved, primary veins about 12 on each side slightly grooved ; under surface clad with a thick bright, rusty-red, woolly indumentum of hairs mixed with small glands, midrib raised, the rest of venation hidden ; petiole thick, 1·5-2 cm. long, 6 mm. broad, clad with indumentum like the young shoots.

Inflorescence : a short racemose umbel of 10-15 flowers ; rhachis about 5 mm. long, rufously hairy and glandular.

Pedicels : about 2 cm. long, densely tomentose and glandular.

Calyx : about 1 cm. long, densely glandular, cut to near the base into 5 lobes ; lobes oblong-obtuse, 5 mm. broad, margins fringed with glands and hairs.

Corolla : tubular-campanulate, 4 cm. long, rose or reddish with crimson markings ; lobes 5, rounded, 1·5 cm. long, 2·5 cm. broad, crenulate, emarginate.

Stamens : 10, unequal, 1·5-2·5 cm. long ; filaments densely pubescent at base.

Pistil : about 3 cm. long ; ovary about 4·5 mm. long, ovoid, densely clad with rufous hairs and glands ; style at base with a few glands and woolly hairs.

Capsule : ovoid, short, about 1·5 cm. long, 1 cm. broad, grooved, blackish with vestiges of hairs and glands.

Habitat: Yunnan ; Sung-Kwei and Lang-kong Passes ; mountains north-east of the Yangtze bend. In open pastures and on margins of pine forests, at 10,000-12,000 ft. altitude.

The centre species of a small assemblage of four—section AAA of key—characterised by a bright rusty-red indumentum on the under side of the leaf, woolly and glandular shoots and petioles and relatively large calyx, which is densely glandular and more or less hairy. This, the central species, is best distinguished by the broadly elliptic leaves with acuminate points and the hairiness of the ovary. The others differ from the central type in leaf shape and in the degree of glandulosity, features which appear to be correlated with their geographical distribution.

RHODODENDRON BUREAVIOIDES, *Balf. f.* in *Notes R.B.G. Edin.*, vol. 13 (1920), 33.

Illustration—

Habit : a shrub of 4-10 ft. with stout shoots clad with a more or less persistent thick cinnamon-brown woolly tomentum mixed with glands.

Leaves : lamina oblong-oval, 10-14 cm. long, 4-5 cm. broad ; apex obtuse or acuminate ; base rounded or cordulate ; upper surface smooth, somewhat glossy glabrescent with vestiges of juvenile hairs, midrib grooved, primary veins about 16 on each side slightly impressed ; under surface clad with a thick woolly rusty-red indumentum ; petiole thick, about 1 cm. long, woolly like the young stems.

Inflorescence : a racemose umbel of about 15 flowers ; bracts and bracteoles more or less persisting during flowering ; rhachis short.

Pedicels : about 1·5 cm. long, woolly and glandular.

Calyx : about 8 mm. long, split to near the base into 5 oblong membranous lobes, floccose and glandular.

Corolla : about 4·5 cm. long, funnel-campanulate, rose with a deep blotch at base and crimson spotted.

Stamens : 10, unequal, 2-3 cm. long ; filaments puberulous at base.

Pistil : 3·5 cm. long ; ovary about 5 mm. long, glandular, without hairs ; style at the base glandular only, without hairs.

Capsule :

Habitat : Western China ; Szechuan ; Tatsienlu.

R. Bureavioides is a northern Szechuan expression of *R. Bureavii*, which in its typical form is confined to the Lang-kong and Sung-Kwei Passes north of Tali-fu. It differs from *R. Bureavii* in its larger, more oblong and less elliptic leaves, its larger flowers, in its glandular ovary without hairs, and in the lack of hairs at the base of the style.

RHODODENDRON CODONANTHUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1922), 249.

Illustration—

Habit : a small shrub 2-3 ft. high ; branches a year old about 3 mm. in diameter, with more or less detersile rufous-tomentose and glandular indumentum ; perulae of foliage buds more or less persistent for one or two years.

Leaves : lamina thick, leathery, oblanceolate, 3-5 cm. long, 1-2 cm. broad ; apex subacuminate, margin recurved ; base obtuse ; upper surface mat, minutely rugulose, glabrous except for vestiges here and there of glands and hairs, midrib grooved, primary veins about 10 on each side obscure ; under surface clad with a loose patchy rufous indumentum of more or less detersile woolly hairs and about the prominent midrib with small glands ; petiole barely 1 cm. long, more or less tomentose and glandular.

Inflorescence : an umbel of about 6 flowers.

Pedicels : about 2 cm. long, glandular with minute glands.

Calyx : cupular, about 4 mm. long ; lobes 5, pale yellow, oblong-ovate, fringed with glands.

Corolla : campanulate, about 3 cm. long, bright yellow with crimson markings ; lobes 5, about 1 cm. long, 1·5 cm. broad, emarginate.

Stamens : 10, about 1·5 cm. long, much shorter than the corolla ; filaments hairy at the base.

Pistil : about 2·5 cm. long ; ovary dome-shaped, about 4 mm. long, densely glandular with stalked glands, epilose ; style glandular to the tip.

Capsule :

Habitat : North-Western Yunnan ; Mekong—Yangtze Divide. In open scrub on rocky hillsides, at 12,000-13,000 ft. altitude.

Quite an aberrant species and readily distinguished in its subseries by its small leaves and yellow flowers. It is not in cultivation. A rare plant in Yunnan and a very shy flowerer there, as Mr. Forrest found it only once in bloom, and then sparingly.

RHODODENDRON CRUENTUM, *Lévl.* in *Fedde Repert.*, vol. 12 (1913), 284.

Illustration—

Habit : a small tree ; branches one year old 5 mm. in diameter, clad with dense thick rusty indumentum of hairs mixed with glands.

Leaves : lamina thick, leathery, broadly oval-lanceolate, 5-7·5 cm. long, 2-3 cm. broad ; apex acute, margin recurved ; base obtuse or somewhat wedge-shaped ; upper surface dark green, somewhat glossy, smooth, glabrous, midrib grooved, primary veins about 8 on each side hardly visible ; under surface clad with a thick persistent rusty-red woolly indumentum ; petiole stout, 2 cm. long, swollen and expanded at base, clad with an indumentum like that of young stems.

Inflorescence : an umbel of about 10 flowers.

Pedicels : stout, about 1·4 cm. long, clad with a rusty-red woolly tomentum mixed with glands.

Calyx : about 4 mm. long, fulvous, densely woolly with hairs and glands ; lobes 5, fleshy, 2·5-3·5 cm. broad, gland-ciliate.

Corolla : tubular-campanulate, white or white-flushed rose, about 2·5 cm. long ; lobes 5, 1·5 cm. long, 2 cm. broad, crenate, emarginate.

Stamens : 10, unequal, 1·5-2 cm. long ; filaments broadened at base, and there densely pubescent.

Pistil : about 3 cm. long ; ovary 3·5-5 mm. long, conoid, grooved, densely glandular and tomentose ; style glandular and floccose for more than half its length.

Capsule :

Habitat : North-Eastern Yunnan ; north and south of Tungchwan.

R. cruentum is a close relative of *R. Bureavii*, from which it differs in the smaller fleshy calyx, smaller corolla, and the very glandular style.

RHODODENDRON DETERSILE, *Franch.* in *Journ. de Bot.*, vol. 12 (1898), 260.

Illustration—

Habit: a shrub about 3 ft. high with twisted branches, leaves clustered at ends of shoots and mixed with bud-scales which persist longer than the leaves; shoots at first clothed with a rufous wool, ultimately glabrous, those below inflorescences about 5 mm. in diameter.

Leaves: lamina small for the series, 3-6 cm. long, 1-2 cm. broad, elliptic to oblanceolate; apex blunt or shortly acuminate with a distinct thick mucro; from the broadest part, which is slightly above the middle, tapered to a blunt or subcordulate base; margin revolute, and glandular; upper surface more or less rugulose, somewhat glossy, glabrescent at maturity but with vestiges of juvenile hairs and glands, midrib and primary veins, the latter about 11 on each side, deeply grooved; under surface clad with a loosely woolly brownish tomentum, more or less detersile and somewhat patchy, with small bare areas between the wool, eglandular; petiole about 5 mm. long, thickly woolly.

Inflorescence: a compact umbel of about 8 flowers; rhachis very short.

Pedicels: about 1-1·5 cm. long, densely woolly and glandular.

Calyx: 6-8 mm. long, split to near the base into 5 oval-oblong lobes, rounded or pointed, hairy and glandular and fringed with glands.

Corolla: campanulate, about 3 cm. long, reddish, hairy within; lobes 5.

Stamens: 10, unequal, the longest about 2 cm.; filaments pilose at the base.

Pistil: about 2·5 cm. long; ovary conoid, grooved, 5 mm. long, tomentose and glandular; style glabrous.

Capsule: about 1 cm. long, 5 mm. broad, blackish with vestiges of stalked glands and hairs.

Habitat: Eastern Szechuan. At 7000-8000 ft. altitude.

In its tufted, congested and more or less revolute leaves, its persistent perulae, its small compact truss and small flower, *R. detersile* in general appearance suggests affinity with some members of the Roxieanum subseries, but the relatively large calyx lobes fringed with glands establishes an affinity also with members of the Adenogynum subseries. In its subseries it is unmistakable. No other member has the same small bullate leaf with patchy detersile indumentum on the under side.

RHODODENDRON DETONSUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 48.

Illustration—

Habit : a shrub 9-12 ft. high with stout branches ; those a year old about 5 mm. in diameter, at first sparsely floccose and glandular, later glabrous.

Leaves : lamina leathery, oblong to oblong-elliptic, 7-12 cm. long, 2-4 cm. broad ; apex obtuse or shortly and broadly acuminate ; base broadly obtuse or rounded ; upper surface mat, smooth, glabrescent with vestiges of floccose hairs and glands, midrib grooved, primary veins about 14 on each side inconspicuous ; under surface pale cinnamon to brown clad with a detersile indumentum of brownish-floccose hairs and with vestiges of juvenile glands, midrib prominent, primary veins slightly prominent ; petiole about 2·5 cm. long, grooved above, at first coated with brown floccose hairs and glands.

Inflorescence : a lax racemose umbel of about 10 flowers ; rhachis barely 1 cm. long, sparsely glandular and floccose.

Pedicels : 3 cm. long, more or less glandular and sparingly floccose.

Calyx : 3-5 mm. long, split to beyond the middle into 5 lobes ; lobes ovate, obtuse, sparingly glandular on the back and gland-fringed.

Corolla : funnel-campanulate, about 4·5 cm. long, rose-pink with a few crimson spots ; lobes 5-7, about 1·5 cm. long, 2·5 cm. broad.

Stamens : 10-14, unequal, 2-3·3 cm. long ; filaments finely puberulous at base over about one-third of their length.

Pistil : about 4 cm. long ; ovary conoid, truncate, about 6 mm. long, densely glandular ; style glandular through the lower three-fourths of its length.

Capsule :

Habitat : Yunnan ; Sung-Kwei Divide. Margins of mixed forests at 9000-11,000 ft. altitude.

In calyx and corolla this species is closely akin to *R. adenogynum* and its allies. It differs in the broader leaf with so thin and detersile an indumentum that the mature leaf is almost bare. *R. xenosporum*, an undescribed plant which has appeared in cultivation as a rogue, is probably a form of *R. detonsum*.

RHODODENDRON DUMICOLA, *Tagg & Forrest, sp. nov.*

Illustration—

Habit : a shrub of 3-4 ft. ; young shoots and petioles clad with short-stalked glands.

Leaves : lamina oblong-elliptic, 7 cm. long, 3 cm. broad ; apex obtuse ; base rounded ; upper surface slightly rugulose, primary veins 14 on each side impressed ; under surface clad with a thinnish tawny felt, midrib prominent, floccose and glandular ; petiole 1·5 cm. long, at first floccose and glandular, later glabrescent.

Inflorescence : umbellate, 5-7-flowered ; rhachis a few mm. long.

Pedicels : 1·5-2 cm. long, glandular with short-stalked glands.

Calyx : large (foliaceous), split almost to the base into 5 unequal ovate-rounded lobes, the smallest a few mm. long and broad, the largest 8 mm. long, 5 mm. broad, sparsely glandular on the back and gland-fringed on the margin.

Corolla : campanulate, white-flushed rose with a faint blotch of crimson at the base, 3·5 cm. long ; lobes 5, rounded, 1-1·5 cm. long, 1·5 cm. broad.

Stamens : 10, unequal, 1·5-2·5 cm. long ; filaments puberulous at base.

Pistil : 3·5 cm. long ; ovary conoid, densely clad with short-stalked glands ; style glabrous.

Capsule :

Habitat : North-Western Yunnan ; Mekong – Salween Divide. On rocky slopes and in alpine thickets at 14,000 ft. altitude.

This Yunnan species finds its nearest ally in the Szechuan *R. Faberi* but is much more glandular. It has evident relationship also with *R. mimetes* but has a much larger calyx. Within the subseries Adenogynum it is one of the species with less thick indumentum than those species associated with *R. adenogynum*.

RHODODENDRON ELEGANTULUM, *Tagg & Forrest* in *Notes R.B.G. Edin.*, vol. 15 (1927), 311.

ILLUSTRATION—

HABIT: a compact bush or shrub of 3-5 ft.; shoots below inflorescences about 7 mm. in diameter, densely cinnamon woolly.

LEAVES: lamina oblong-elliptic to oblong-lanceolate, 5-9 cm. long, 1·5-3 cm. broad; apex acute, margin slightly recurved; base blunt or cordulate; upper surface light green, not glossy, slightly rugulose, glabrescent with vestiges of juvenile hairs, midrib slightly grooved, primary veins about 14 on each side inconspicuous; under surface clad all over with a dense cinnamon to light rusty-red somewhat woolly indumentum, midrib raised, rest of venation concealed; petiole about 1·5 cm. long, densely cinnamon-tomentose, occasionally greyish.

INFLORESCENCE: a compact umbel of 10-20 flowers; rhachis about 1 cm. long, densely pubescent.

PEDICELS: stout, about 2 cm. long, densely greyish floccose and glandular.

CALYX: as much as 1 cm. long, split to near the base into 5 or 6 unequal oblong lobes with rounded or pointed apices, glandular and hairy on the back and the margin fringed with glands and hairs.

COROLLA: funnel-campanulate, about 3 cm. long, prominently ridged at the base of the tube, pale purplish-pink with darker spots.

STAMENS: 10, unequal, 1·5-2·5 cm. long; filaments hairy at base; anthers 3 mm. long.

PISTIL: 3 cm. long; ovary cylindric, blunt, about 5 mm. long, densely glandular with stipitate glands, not woolly; style glabrous or with a few glands at base slightly expanded below the small lobulate stigma.

CAPSULE: ovoid, about 1·5 cm. long; densely glandular, enclosed in the persistent calyx-lobes.

HABITAT: South-Western Szechuan; Yungning. On open sheltered slopes amongst Larch, Abies, etc., at 12,000-13,000 ft. altitude.

A species akin to *R. Bureavii* but readily distinguished by its relatively narrow, lanceolate leaves, with a more felty and less woolly indumentum.

RHODODENDRON FABERI, *Hemsl.* in *Journal Linn. Soc.* (*Bot.*), vol. 26 (1889), 22.

ILLUSTRATION—

HABIT : a shrub with thick branches, the young shoots clad with a rust-coloured wool.

LEAVES : lamina thick, leathery, oblong-oval, up to 14 cm. long, 4·5 cm. broad ; apex acute ; base rounded or obscurely auriculate ; upper surface rugulose, at first tomentose, later glabrescent, midrib grooved, primary veins 10-12 on each side slightly grooved ; under surface light brown to buff or rusty-brown, clad with a bistrate woolly indumentum, the upper wool more or less detersile, and where worn off revealing a thin grey under stratum ; petiole 2 cm. long, with indumentum like the young stems.

INFLORESCENCE : an umbel of about 10 flowers.

PEDICELS : about 2·5 cm. long, densely glandular.

CALYX : large, about 1 cm. long, split almost to base into 5 large lobes ; lobes ovate, rounded, clad with glands on the back.

COROLLA : campanulate, 4 cm. long ; lobes 5, rounded, 1·5 cm. long, 2 cm. broad, slightly emarginate.

STAMENS : 10, unequal, shorter than corolla ; filaments puberulous at base.

PISTIL : about 2·7 cm. long ; ovary ovoid, densely setose-glandular ; style glabrous.

CAPSULE :

HABITAT : Szechuan ; Mount Omei.

R. Faberi and *R. Prattii* are regarded by some authorities as one species. From herbarium material it appears that *R. Faberi* has smaller leaves and a denser indumentum than *R. Prattii* ; moreover, the style of *R. Prattii* is frequently more or less glandular often for one-third of its length.

RHODODENDRON FABERIOIDES, *Balf. f.* in *Notes R.B.G. Edin.*, vol. 13 (1920), 44.

Illustration—

Habit : a shrub with somewhat thick tomentose branches.

Leaves : petiolate, as much as 10 cm. long ; lamina oblong-oval or oboval ; apex shortly beaked ; base somewhat rounded ; upper surface glabrescent with hair vestiges in grooved midrib ; under surface clad with a dense brownish woolly tomentum.

Inflorescence : an umbel of about 10 flowers.

Pedicels : about 2 cm. long, floccose and glandular.

Calyx : about 1 cm. long, split into 5 large lobes ; lobes oblong-oval, hairy and glandular on the back, fringed with glands.

Corolla : funnel-campanulate, about 4 cm. long ; lobes 5, shortly rounded, emarginate.

Stamens : 10, much shorter than style ; filaments puberulous.

Pistil : shorter than corolla ; ovary densely tomentose and glandular ; style glabrous.

Capsule :

Habitat : Western Szechuan.

Perhaps only a subspecies of *R. Faberi* differing in having the pedicels, calyx and ovary hairy as well as glandular.

RHODODENDRON MIMETES, *Tagg & Forrest* in *Notes R.B.G. Edin.*, vol. 15 (1927), 315.

ILLUSTRATION—

HABIT: a shrub of 3-7 ft. with thick short branches; shoots below inflorescences about 7 mm. in diameter, thinly floccose or glabrescent.

LEAVES: lamina leathery, elliptic to oblong-oval, 6-10 cm. long, 2·5-4 cm. broad; apex blunt or shortly acuminate; base blunt or rounded; upper surface minutely rugulose, glabrescent, midrib grooved, primary veins about 15 on each side slightly impressed; under surface a pale or deep buff, clad with a thickish bistrate, loosely felty indumentum, the upper layer of buff-coloured woolly hairs, detersile and inclined to wear off in patches giving a grey to buff mottling, midrib prominently raised, more or less glabrescent with traces of hairs and glands; petiole about 1·5 cm. long, deeply grooved above, glabrescent with vestiges of hairs and glands.

INFLORESCENCE: a lax racemose umbel of about 10 flowers; rhachis about 1 cm. long, floccose.

PEDICELS: about 2 cm. long, densely tomentose and glandular.

CALYX: as much as 5 mm. long, split nearly to the base into 5 unequal ovate lobes, gland-fringed and densely glandular and slightly hairy on the back.

COROLLA: widely funnel-campanulate, 4 cm. long, white faintly-flushed and margined rose with a few crimson markings; lobes 5, 1·5 cm. long, 2 cm. broad, rounded, emarginate.

STAMENS: 10, unequal, 1·7-3 cm. long; filaments hairy at base.

PISTIL: 3·5 cm. long; ovary conoid, 6 mm. long, densely tomentose and also more or less glandular; style glabrous.

CAPSULE:

HABITAT: South-Western Szechuan; mountains around Muli. Amongst rock and scrub on slopes in gullies and in thickets and margins of forests, at 11,000-12,000 ft. altitude.

In leaf shape this is similar to *R. detonsum* but the somewhat detersile indumentum is different, and the style, glandular in *R. detonsum*, is here glabrous. There is a variety, var. *simulans*, with broader cordate leaves and with a splitting indumentum recalling the aspect of *R. flavorufum*.

RHODODENDRON PRATTII, *Franch.* in *Journ. de Bot.*, vol. 9 (1895), 389.

Illustration—

Habit : a shrub with branches at first clad with greyish to rufous tomentum, later glabrescent ; shoots below inflorescences about 1 cm. diameter.

Leaves : lamina leathery, rigid, broadly ovate, to elongate-elliptic, 8-14 cm. long, 5-8 cm. broad ; apex shortly acute or acuminate ; base blunt, rounded or subcordate ; upper surface at maturity glabrous, slightly rugulose, midrib and primary veins, the latter about 15 on each side, slightly grooved ; under surface clad with a thin fawn to brown indumentum with a soft, smooth surface, the upper layer more or less detersile and where worn off revealing a lighter coloured under stratum ; petiole thick, 1·5-2·5 cm. long, clad with thin tomentum mixed with glands.

Inflorescence : a racemose umbel of 12-20 flowers ; rhachis about 1 cm. long, fawn-tomentose.

Pedicels : 1·5-2·5 cm. long, rufous hairy and glandular.

Calyx : about 1 cm. long, split almost to the base into 5 broadly oblong, rounded lobes, which are 6-8 mm. long, clad on the back with glands and hairs and gland-fringed on the margins.

Corolla : funnel-campanulate, white-spotted pink, about 4-5 cm. long ; lobes 5, rounded.

Stamens : 10, 1·7-3 cm. long, filaments densely hairy at base.

Pistil : 3·5 cm. long ; ovary ovoid, 6 mm. long, 4 mm. broad, white to rufous-tomentose and glandular ; style glabrous or more or less glandular at the base for one-third its length.

Capsule :

Habitat : Szechuan ; in the neighbourhood of Tatsienlu.

This and *R. Faberi* are close allies and by some regarded as the same species. Plants in cultivation favour large leaves with thin indumentum and are usually ascribed to *R. Prattii*. The original type specimens of *R. Faberi* have a very dense indumentum. *R. Prattii* and its ally are very different in appearance from their Yunnan associates.

RHODODENDRON WUENSE, *Balf. f.* in *Notes R.B.G. Edin.*, vol. 13 (1920), 64.

ILLUSTRATION—

HABIT : a shrub of about 18 ft. high with thick branches, which at first are clad with a thick dense rust-coloured indumentum.

LEAVES : lamina thick, leathery, oblong-oval or oval, as much as 8·5 cm. long and 4 cm. broad ; apex shortly rostrate, margin recurved ; base rounded or cordulate ; upper surface mat, minutely rugulose, glabrous at maturity except for the midrib, which is raised at the base and narrowly grooved towards the apex and retains vestiges of hairs of a juvenile tomentum ; under surface clad with a dense rust-coloured indumentum, the raised midrib bearing also glands ; petiole about 1·5 cm. long, clad with tomentum like the young shoots.

INFLORESCENCE : a short racemose umbel of few flowers ; rhachis about 1 cm. long, puberulous.

PEDICELS : about 1·5 cm. long, glandular and floccose.

CALYX : as much as 1 cm. long, split into 5 unequal lobes ; lobes oblong-oval, glabrous on the back but fringed on the margin with short glands.

COROLLA : campanulate, as much as 3·5 cm. long ; lobes 5, about 1 cm. long, 2 cm. broad, emarginate.

STAMENS : 10, unequal, much shorter than the corolla and pistil ; filaments puberulous.

PISTIL : shorter than corolla ; ovary short, dumpy, ovoid, densely clothed with rufous-fasciate hairs and short-stalked glands ; style glandular at the base.

CAPSULE :

HABITAT : Western China.

R. wuense is a little known species which cannot be far away from *R. Faberi* and *R. Faberioides*, but only further material can clear up its position.

TALIENSE SERIES

SUBSERIES ROXIEANUM

This subseries is confined to Yunnan and immediately adjoining areas. In a general way the subseries can be distinguished from the other subseries of the Taliense series by :—

(*a*) Very short annual growths.
(*b*) The tendency to a narrow leaf.
(*c*) The frequent marked incurving of the leaf margin.
(*d*) The dense indumentum of the typical members.
(*e*) The small calyx.
(*f*) The white to rose flowers with conspicuous spots.
(*g*) The tendency to persistent perulae.
(*h*) The congested truss.
(*i*) The ovary, glandular or hairy or both, very rarely glabrous.

The large calyx with fringing glands of the majority of the species of the subseries Adenogynum separates that group ; the Szechuan subseries Wasonii has broad flat leaves with a densely tomentose ovary ; the subseries Taliense has a glabrous ovary. The subseries Roxieanum can therefore be readily distinguished from the other subseries as regards most of its species. It has not, however, the same definiteness *inter se* as the other three subseries, and there is a suggestion that it represents the evolution of an alpine summation of these others. The species which centre round *R. Roxieanum* and *R. proteoides* are unmistakable and need never be confused with any members of the other three subseries – their foliage alone is quite characteristic. There is, however, an approximation to the Wasonii subseries when the position of *R. tritifolium* and its allies is brought under review, but the indumental characters favour the inclusion of these in the Roxieanum subseries. There is also an undoubted link with the Sanguineum subseries in such species as *R. comisteum* and its three allies (see key), which show a tendency to the absence of spotting on the corolla and to a laxer truss. While most of the species are obviously akin to the central *R. Roxieanum*, it may be useful to point out the following anomalies :—

1. Ovary glabrous or nearly so in *R. lampropeplum*, *R. pronum* and *R. gymnocarpum*.
2. Large calyx in *R. perulatum*.
3. Few or no spots on corolla in *R. comisteum* and its three allies.
4. Yellow flowers in *R. pronum* and sometimes in *R. proteoides*.

TALIENSE SERIES

SUBSERIES ROXIEANUM

KEY TO THE SPECIES

A. Leaves narrowly oblong, lanceolate or oblanceolate, at least 3-4 times as long as broad ; apex pointed :
B. Leaves flat with slightly recurved margins, tapered to distinct petioles which at first are thinly tomentose.
Indumentum of under surface of leaf felty (not thickly woolly), more or less detersile :
C. Pedicel and ovary hairy, *not* glandular :
D. Leaves long (7-15 cm.), indumentum loosely felty ; corolla with basal blotch ; ovary rufous-tomentose **triplonaevium.**
DD. Leaves shorter (6-11 cm.), indumentum compact felty ; corolla without basal blotch ; ovary sparsely floccose **iodes.**
CC. Pedicel and ovary glandular or glandular with hairs :
D. Leaves long (10-15 cm.), base tapered.
Ovary glandular and tomentose . . . **tritifolium.**
DD. Leaves shorter (5-9 cm.), base somewhat rounded ; ovary densely glandular, not tomentose . **russotinctum.**
BB. Leaves revolute with marked recurved margins tapered to short petioles which are densely woolly.
Indumentum of under surface of leaf thickly woolly, persistent :
C. Pedicel and ovary hairy, *not* glandular :
D. Leaf upper surface glossy ; indumentum of under surface bright rusty-red . . . . **Roxieanum.**
DD. Leaf upper surface mat ; indumentum of under surface dull rufous . . . . . **poecilodermum.**
CC. Pedicel and ovary glandular or glandular with hairs :
D. Leaf upper surface glossy ; indumentum of under surface bright rufous-orange . . . . **recurvum.**
DD. Leaf upper surface mat ; indumentum of under surface dull buff . . . . . **aischropeplum.**
AA. Leaves broadly oblong, oblong-elliptic or oblanceolate, rarely as much as three times as long as broad; apex blunt :
B. Leaves more or less revolute at margin (except in *R. globigerum*).
Flower truss dense, 8-20 flowers.
Flowers white to rose or pale yellow with conspicuous spots :

C. Pedicel tomentose, eglandular ; ovary tomentose :
D. Leaf indumentum rusty red without a white under stratum . . . . . **bathyphyllum.**
DD. Leaf indumentum tawny with a white under stratum **globigerum.**
CC. Pedicel floccose or glabrous, eglandular ; ovary glabrous :
D. Shrub of 2-3 ft. ; leaf indumentum rusty red **lampropeplum.**
DD. Prostrate plant of 3-10 in. ; leaf indumentum tawny **pronum.**
CCC. Pedicel and ovary more or less glandular :
D. Shrub of 3-8 ft. with leaves 4-9 cm. long **cucullatum.**
DD. Dwarf plant of 1-3 ft. with leaves 2-4 cm. long **proteoides.**
BB. Leaves more or less flat (except in *R. comisteum*).
Flower truss loose, 3-8 flowers.
Flowers rose to claret crimson faintly spotted or without spots :
C. Calyx large, as much as 10 mm. long . . **perulatum.**
CC. Calyx small, 2-3 mm. long :
D. Ovary tomentose eglandular . . . **comisteum.**
DD. Ovary nearly glabrous, eglandular . **gymnocarpum.**
DDD. Ovary glandular and floccose . . **microgynum.**

RHODODENDRON AISCHROPEPLUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1922), 229.

ILLUSTRATION—

HABIT : a shrub 4-6 ft. high with stout shoots of short annual growth and congested foliage ; scale leaves more or less persistent for several years ; shoots woolly, those below inflorescences as much as 1 cm. in diameter.

LEAVES : lamina thick, leathery, lanceolate or oblanceolate, 5-9 cm. long, 1-1·7 cm. broad ; apex acuminate ; base gradually narrowed to the petiole ; upper surface slightly rugulose, mat, glabrescent with vestiges of detersile rufous hairs ; midrib grooved, primary veins 12 on each side, inconspicuous ; under surface clothed with a thick persistent dull-buff indumentum with a woolly surface ; midrib prominent, primary veins concealed ; petiole about 5 mm. long, 4 mm. broad, densely woolly.

INFLORESCENCE : a small compact many-flowered racemose umbel with bud-scales more or less persistent during the flowering period.

PEDICELS : hardly 1 cm. long, tomentose and glandular.

CALYX : a minute 5-angled cup with glandular margins.

COROLLA : funnel-shaped, about 2·7 cm. long, white or creamy-white occasionally flushed rose with deep crimson spotting on the posterior side ; lobes 5, rounded, 1 cm. long, 1·5 cm. broad.

STAMENS : 10, 1-1·8 cm. long ; filaments puberulous.

PISTIL : about 2·2 cm. long, slightly longer than stamens ; ovary about 3 mm. long, conoid, blunt, densely glandular ; style glabrous, not thickened below the small stigma.

CAPSULE :

HABITAT : North-Western Yunnan ; Mekong – Salween Divide Open rocky moorland and margins of pine forests, at 12,000-13,000 ft. altitude.

This species bears to its ally *R. recurvum* the same relationship that *R. poecilodermum* has to *R. Roxieanum*. It can be looked on as a Roxieanum with mat upper surface of leaf and a glandular ovary.

RHODODENDRON BATHYPHYLLUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 27.

Illustration—

Habit : a low shrub of 3-5 ft. ; branches a year old 5 mm. in diameter, densely rusty-tomentose.

Leaves : lamina thick leathery, oblong, 4-7 cm. long, 1·5-2·5 cm. broad ; apex obtuse with the tip recurved ; margin revolute ; base obtuse ; upper surface mat, slightly rugulose, glabrescent with vestiges of hairs and glands, midrib grooved, primary veins 10 on each side slightly grooved ; under surface clad with a thick dense rusty-red woolly tomentum, the midrib showing at the leaf base only and the primary veins quite concealed ; petiole thick, about 1 cm. long, enwrapped in a thick tomentum.

Inflorescence : umbellate, 10-15-flowered, with the outer inflorescence bud-scales more or less persistent during the flowering period.

Pedicels : about 1·5 cm. long, floccose or glabrescent, eglandular.

Calyx : short, with 5 short lobes, floccose on the margins.

Corolla : campanulate, about 4 cm. long, white with copious crimson spots on the posterior side ; lobes 5, rounded, emarginate, 1 cm. long, 1·5 cm. broad.

Stamens : 10, unequal, 1·5-1·9 cm. long ; filaments pubescent over the lower half.

Pistil : about 3 cm. long ; ovary 4 mm. long, conoid, blunt, tomentose, eglandular ; style glabrous, hardly widened beneath the small lobulate stigma.

Capsule :

Habitat : South-Eastern Tibet ; Mekong—Salween Divide. On rocky slopes at 13,000 ft. altitude.

R. bathyphyllum finds its twin species in *R. cucullatum*. The first represents the tomentose expression, the latter the glandular expression. Apart from the difference in glandularness, the indumentum characters are not the same, the white under stratum being absent in *R. bathyphyllum*.

RHODODENDRON COMISTEUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 42.

Illustration—

Habit : a leafy shrub 2-3 ft. high ; annual growths and internodes short ; branchlets stout, clad with a rufous or cinnamon-brown woolly indumentum which persists for several years ; perulae persisting for several years.

Leaves : lamina lanceolate or oblanceolate, 2·5-5 cm. long, 1-2 cm. broad ; apex obtuse ; margin recurved ; base cuneate ; upper surface dark green, glabrescent, midrib grooved, primary veins about 10-12 on each side grooved ; under surface clad with a thick persistent dull-buff or rusty woolly indumentum, midrib prominent, rest of venation concealed ; petiole at most 5 mm. long, clad with indumentum like the stem.

Inflorescence : a terminal umbel of 6-8 flowers.

Pedicels : about 2 cm. long, densely tomentose, with rufous woolly hairs, eglandular.

Calyx : small, 2-3 mm. long, floccose-tomentose ; lobes 5, rounded or broadly triangular.

Corolla : campanulate, 3·7 cm. long, rose with a very few posterior crimson spots, fleshy at base ; lobes 5, large rounded, 1·4 cm. long, 2 cm. broad, emarginate and crenulate.

Stamens : 10, unequal, 1·4-2·4 cm. long ; filaments densely puberulous from base over a small area.

Pistil : 2·7 cm. long ; ovary ovoid, grooved, truncate, 3·5 mm. long, clad with a pinkish tomentum, eglandular ; style glabrous, slightly expanded below the lobulate discoid stigma.

Capsule :

Habitat : South-Eastern Tibet ; Tsarong ; Mekong - Salween Divide. Open stony slopes and ledges of cliffs, and open pastures, at 13,000-14,000 ft. altitude.

R. comisteum is an outstanding and beautiful species in a small section of the Roxieanum subseries which deviates from the typical Roxieanums in the direction of the Sanguineum subseries. *R. comisteum* is distinguished from its near allies *R. gymnocarpum* and *R. microgynum* by its deep-rose flowers and densely tomentose but eglandular ovary.

RHODODENDRON CUCULLATUM, *Hand.-Mazz.* in *Anz. Akad. Wiss. Wien*, Nos. 4-5 (1921), 26.

(R. COCCINOPEPLUM, *Balf. f. & Forrest.*)

ILLUSTRATION—

HABIT : a shrub of 3-8 ft. with thick branches and foliage congested at ends of shoots ; stems below inflorescences as much as 7 mm. in diameter, densely reddish-woolly ; internodes and annual growths short ; perulae persisting for several years.

LEAVES : lamina thick, narrowly obovate to oblanceolate, 4-8 cm. long, 2-3 cm. broad ; apex blunt, slightly hooded ; base narrowed to the petiole ; upper surface slightly rugulose, more or less shining and at maturity glabrous, midrib grooved, primary veins about 12 on each side slightly impressed ; under surface including the raised midrib clad with a persistent bistrate tomentum, the upper layer thick rusty-red, woolly, under layer thin, white, primary veins concealed ; petiole short and broad, tomentose like the young stem.

INFLORESCENCE : a small compact umbel of many flowers, closely surrounded by the bud-scales and the congested foliage.

PEDICELS : 1-1·5 cm. long, floccose and glandular.

CALYX : very short, glandular ; lobes 5, very small.

COROLLA : funnel-shaped, about 3 cm. long, white with crimson spots ; lobes 5, rounded, emarginate.

STAMENS : 10, 1-1·5 cm. long ; filaments hairy at the base.

PISTIL : about 2·3 cm. long ; ovary about 4 mm. long, densely glandular ; style glabrous.

CAPSULE :

HABITAT : South-Western Szechuan and North-Eastern Yunnan ; Muli Mountains and north-east of Chungtien. On cliffs, rocky pastures and open bouldery slopes, at 12,000 ft. altitude.

This is closely allied to *R. bathyphyllum*, but the ovary has numerous glands which are lacking in its ally. It differs also in indumental characters from *R. bathyphyllum* in that under the rusty-red wool of the upper layer is a distinct white layer. More elongation and tapering of the leaf apex would take the species near to *R. recurvum*.

RHODODENDRON GLOBIGERUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1922), 259.

(R. PORPHYROBLASTUM, *Balf. f. & Forrest.*)

ILLUSTRATION—

HABIT : a shrub of 3-6 ft. ; branches thick, gnarled, with the perulae persisting for several years ; branches below inflorescences about 7 mm. in diameter clad with a whitish to fawn, felted tomentum.

LEAVES : lamina coriaceous, oblong-oval or oboval, 3-8 cm. long, 1·5-3 cm. broad ; apex blunt ; base cuneate ; upper surface dark green opaque, minutely rugulose, glabrescent with vestiges of a juvenile tomentum, midrib grooved, primary veins about 12 on each side slightly impressed ; under surface clad with a thick woolly fulvous bistrate indumentum, the upper layer felty and somewhat spongy, the under a white pellicle ; petiole 1 cm. long, grey to fawn-tomentose.

INFLORESCENCE : a compact umbel of about 15 flowers.

PEDICELS : 1 cm. long, densely woolly, eglandular.

CALYX : a small undulate tomentose rim.

COROLLA : campanulate, 2·7 cm. long, white with crimson markings, puberulous inside ; lobes 5, rounded, emarginate, about 1·5 cm. long, 2 cm. broad.

STAMENS : 10, unequal, 1·3-1·7 cm. long ; filaments puberulous.

PISTIL : 2 cm. long, shorter than corolla ; ovary conoid, truncate, 4 mm. long, sparsely floccose ; style glabrous.

CAPSULE :

HABITAT : South-Western Szechuan ; Muli Mountains. In thickets and on open rocky slopes, at 11,000-12,000 ft. altitude.

Some aspects of this plant recall *R. taliense* and its allies, but the indumentum brings it nearer *R. cucullatum*, which, however, is markedly glandular on the ovary. The imperfectly known *R. porphyroblastum* is almost certainly the same species. Compared with its immediate allies, *R. globigerum* strikes one as a coarser plant with larger flatter leaves.

RHODODENDRON GYMNOCARPUM, *Balf. f. MS.* (descript. *Tagg*) in *Notes R.B.G. Edin.*, vol. 15 (1927), 313.

ILLUSTRATION—

HABIT : a shrub of 2-3 ft., branches with short annual growths ; shoots a year old about 3 mm. diameter, at first clothed with a thin whitish to fawn floccose indumentum and few scattered glands.

LEAVES : lamina thick leathery, oblong-elliptic to oblong-oblanceolate, 4-7 cm. long, 1·5-2·5 cm. broad ; apex obtuse ; base wedge-shaped to semi-rounded ; upper surface slightly rugulose, midrib grooved, lateral veins about 12 on each side slightly impressed ; under surface clad with a fawn semi-woolly indumentum of branched hairs forming a pad over an under layer of many small epidermal glands, midrib prominent, the rest of venation hidden ; petiole about 5 mm. long, sparsely clad like the stem or glabrous.

INFLORESCENCE : a loose umbel of 3-4 flowers ; rhachis very short, sparsely floccose.

PEDICELS : about 1·5 cm. long, thin, sparsely floccose and glandular.

CALYX : about 2 mm. long, with 5 short triangular teeth sparsely clad like the pedicel.

COROLLA : broadly campanulate, 4 cm. long, deep claret crimson with deeper markings on the posterior side ; lobes 5, 1·5 cm. long, 2 cm. broad, deeply notched.

STAMENS : 10, 2-2·5 cm. long ; filaments puberulous over about half their length.

PISTIL : 3 cm. long ; ovary conoid, blunt at apex, glabrous or with a few branched hairs ; style glabrous, slightly expanded below the lobed stigma.

CAPSULE :

HABITAT : South-Eastern Tibet ; Mekong—Salween Divide on Ka-gwr-pu. In cane brakes and among rocks, at 14,000 ft. altitude.

R. gymnocarpum is one of the few species in the subseries with a practically glabrous ovary. This readily distinguishes it from its nearest allies *R. microgynum*, *R. perulatum* and *R. comisteum*. In foliage and corolla it recalls *R. sanguineum* but deviates markedly in the indumentum and the ovary.

RHODODENDRON IODES, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 49.

Illustration—

Habit: a shrub of 6-8 ft. with nodular branches of short annual growth; shoots a year old as much as 7 mm. in diameter, rusty-tomentose without persisting perulae.

Leaves: lamina thick, leathery, lanceolate or rarely oblanceolate, 6-11 cm. long, 1·5-2·5 cm. broad; apex acute, margin slightly revolute; base tapered; upper surface glabrous except for few floccose hairs persisting in the grooved midrib, primary veins about 16 on each side slightly impressed; under surface clad with a rust-coloured indumentum, compact but hardly agglutinate; petiole 1-2 cm. long, rusty-tomentose, deeply grooved above.

Inflorescence: a racemose umbel of 10-12 flowers; rhachis up to 1 cm. long, more or less tomentose.

Pedicels: straight, about 1·5 cm. long, densely floccose, eglandular.

Calyx: minute, with 5 short floccose lobes.

Corolla: funnel-campanulate, 3·5 cm. long, white with crimson spots but without basal blotch; lobes 5, 1·2 cm. long, 1·5 cm. broad, emarginate.

Stamens: 10, unequal, 1·2-2 cm. long; filaments thinly puberulous at base.

Pistil: about 2·5 cm. long; ovary conoid, blunt, about 5 mm. long, sparsely floccose and pubescent; style glabrous, hardly expanded below the small stigma.

Capsule: cylindric, straight, about 1·5 cm. long, 5 mm. broad, 6-8-chambered.

Habitat: South-Eastern Tibet; Mekong–Salween Divide. In open cane and rhododendron thickets, at 12,000 ft. altitude.

At first sight this appears like a small-leaved *R. triplonaevium*. The indumentum is of a more compact character. The corolla has no basal blotch, and the ovary is sparsely floccose and not densely tomentose.

RHODODENDRON LAMPROPEPLUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1922), 272.

ILLUSTRATION—

HABIT : a shrub of 2-3 ft. with congested foliage ; internodes and annual growth of shoots very short ; branches below flower trusses about 5 mm. diameter, clad with a rufous woolly tomentum ; perulae persisting for several years.

LEAVES : lamina thick, stiff, oblong or oblong-oval or oboval, 3-5·5 cm. long, 1-2·5 cm. broad ; apex obtuse recurved ; margin recurved ; base somewhat rounded ; upper surface mat green, rugulose, glabrescent with here and there vestiges of hairs, midrib grooved, primary veins about 8 on each side slightly impressed ; under surface clad with a thick persistent woolly reddish-brown or grey-tinted indumentum, midrib more or less prominent, primary veins concealed ; petiole about 5 mm. long, clad like the stem.

INFLORESCENCE : a small compact many-flowered umbel with bud-scales more or less persistent around the truss.

PEDICELS : about 1 cm. long, floccose-pubescent, eglandular.

CALYX : a short (1·5 mm.) fleshy cup with 5 small teeth.

COROLLA : funnel-shaped, about 3·5 cm. long, white, faintly flushed rose, crimson spotted ; lobes 5, rounded, emarginate, about 1·2 cm. long, 1·8 cm. broad.

STAMENS : 10, unequal, 1-1·7 cm. long ; filaments densely hairy at the base.

PISTIL : about 2 cm. long, much shorter than corolla, hardly exceeding stamens ; ovary ovoid, blunt, 3 mm. long, glabrous ; style glabrous.

CAPSULE :

HABITAT : South-Western Szechuan ; Muli Mountains. Open rocky pastures and on cliffs, at 12,000-14,000 ft. altitude.

R. lampropeplum is an eastern representative of *R. proteoides*, differing in the larger and less revolute leaves, in the white or pale-rose flowers and in the glabrous ovary.

RHODODENDRON MICROGYNUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 99.

Illustration—

Habit : a shrub of 4 ft. ; branches rigid, those one year old 4 mm. in diameter, clad with a tawny indumentum of floccose hairs and fewer glands.

Leaves : lamina thickly leathery, lanceolate or oblanceolate, 4-7 cm. long, 1·5-2 cm. broad, narrowed towards the sharply pointed apex ; base obtuse or cuneate ; upper surface opaque, midrib grooved, primary veins 12 on each side slightly grooved ; under surface buff coloured or dark fawn clad with a thin felty indumentum, midrib elevated, sparingly clad with indumentum, the rest of venation hidden ; petiole 1· cm. long, stout, grooved above, clad with indumentum like young stems or glabrescent.

Inflorescence : a terminal umbel of 5-6 flowers ; rhachis short, tawny-tomentose.

Pedicels : 1-2 cm. long, clad with floccose hairs and small glands.

Calyx : small, about 2 mm. long ; lobes 5, sparingly glandular and floccose.

Corolla : openly campanulate, slightly oblique, dull soft rose without basal blotch but faintly crimson spotted, about 3 cm. long ; lobes 5, about 1·3 cm. long, 2 cm. broad, crenulate.

Stamens : 10, unequal, short, 1-1·7 cm. long ; filaments puberulous at base.

Pistil : very short, 8 mm. long ; ovary ovoid, truncate, 3 mm. long, glandular and floccose ; style very short, glabrous.

Capsule :

Habitat : South-Eastern Tibet ; Mekong–Salween Divide. Open situations on rocky slopes, at 12,000 ft. altitude.

R. microgynum in habit and foliage resembles *R. comisteum* and *R. perulatum*, but the foliage bud-scales do not persist among the leaves for several years as in those two species. The small flower with very faint markings and the very short style (shorter than the stamens) are outstanding features in the series. From *R. gymnocarpum*, which it resembles also in general appearance of the foliage, it differs in its eglandular leaf indumentum as well as in the small flower and short style.

RHODODENDRON PERULATUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 106.

Illustration—

Habit : a shrub 2-4 ft. high ; branches a year old about 3 mm. in diameter, densely tomentose with a matted indumentum of floccose hairs and stalked glands ; scales of foliage-buds persisting for several years.

Leaves : lamina leathery rigid, lanceolate or oblanceolate, 3-7 cm. long, 1-2 cm. broad ; apex acute to blunt ; base tapered, wedge-shaped ; upper surface minutely rugulose, midrib grooved, primary veins about 14 on each side obscure ; under surface clad with a dull tawny or greyish felty indumentum, midrib raised, rest of venation hidden ; petiole about 5 mm. long, grooved above, densely tomentose like the branchlets.

Inflorescence : a racemose umbel of 5-7 flowers.

Pedicels : about 1·5 cm. long, floccose and with a few glands.

Calyx : as much as 7 mm. long, cup fleshy, about 1 mm., more or less glandular and floccose-pubescent ; lobes oblong-oval, glabrous outside, floccose fringed, often falling and leaving a toothed cup.

Corolla : tubular-campanulate, about 3·5 cm. long, pale to deep rose without blotch or spots ; lobes 5, 1·2 cm. long, 1·8 cm. broad, emarginate, crenulate.

Stamens : 10, unequal, 1·4-2·4 cm. long ; filaments puberulous from base for about one-third of their length.

Pistil : about 2·8 cm. long ; ovary ovoid, densely clad with hairs and a few glands with a crest of erect hairs at top ; style glabrous or with a few hairs at the base, slightly expanded below the flat lobulate stigma.

Capsule :

Habitat : South-Eastern Tibet ; Mekong—Salween Divide. On open rocky slopes by streams and bouldery slopes, at 11,000-14,000 ft. altitude.

R. perulatum is readily distinguished in the subseries by the comparatively large calyx. It shows relationship with the Sanguineum subseries in the character of its ovary and in the unspotted flowers, but its foliage and indumentum link it to the subseries Roxieanum.

RHODODENDRON POECILODERMUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1922), 285.

ILLUSTRATION—

HABIT : a shrub of 2-6 ft. with robust branches of short annual growth and congested foliage ; leaves and perulae persisting several years ; shoots below inflorescences 7 mm. thick, clad with a woolly tomentum.

LEAVES : lamina thick, leathery, narrow-lanceolate or oblanceolate, 5-12 cm. long, 1-2·3 cm. broad ; apex acute ; base narrowed to the wide petiole ; upper surface mat, slightly rugulose, glabrescent with vestiges of rufous hairs, midrib grooved, primary veins about 18 on each side impressed ; under surface clad with a soft thick woolly rufous bistrate indumentum, midrib raised and widened at base, primary veins concealed ; petiole ·5-1 cm. long, 5 mm. broad, rufous-tomentose.

INFLORESCENCE : a compact many-flowered umbel ; rhachis 7 mm. long, somewhat hairy.

PEDICELS : about 1 cm. long, tomentose.

CALYX : small, with 5 semi-rounded pubescent lobes.

COROLLA : funnel-shaped, about 3·5 cm. long, white or creamy-white (at times faintly flushed rose) with crimson spots ; lobes 5, rounded, emarginate, about 1·2 cm. long, 2 cm. broad.

STAMENS : 10, unequal, 1·5-2·3 cm. long ; filaments densely puberulous at the base.

PISTIL : 2·5 cm. long, slightly longer than stamens and shorter than corolla ; ovary cylindric, blunt, loosely clad with hairs ; style glabrous and hardly at all thickened below the small stigma.

CAPSULE :

HABITAT : South-Eastern Tibet ; Mekong–Salween Divide. Rocky situations amongst scrub and open situations amongst boulders in pine forests, at 12,000-13,000 ft. altitude.

This is very closely allied to *R. Roxieanum*. It differs in the mat upper surface of the leaf and in the indumentum. Its differences are small, and it may be regarded as the western form of its ally.

RHODODENDRON PRONUM, *Tagg & Forrest* in *Notes R.B.G. Edin.*, vol. 15 (1927), 318.

Illustration—

Habit : a low growing, stunted, prostrate shrub, 3-10 in. high ; branches gnarled and rooting to within a short distance of the terminal clusters of foliage ; internodes and annual growths very short, and the leaves close-set between which are numerous bud-scales ; these persist for many years and give to the branches a thickened and ragged appearance.

Leaves : lamina oblong-elliptic to lanceolate or oblanceolate, 3-6·5 cm. long, 1-2 cm. broad ; apex blunt, margin thick, recurved, and at apex slightly hooded ; base wedge-shaped ; upper surface slightly rugulose, not shining, midrib grooved, primary veins about 8 on each side impressed ; under surface dull grey to fawn, clad with a dense bistrate indumentum, the upper layer forming a loose felty surface over a thin white under layer, midrib prominently raised, rest of venation concealed ; petiole about 5 mm. long, slightly grooved above, more or less glabrescent.

Inflorescence : a racemose umbel of 8-12 flowers surrounded by the persistent bud-scales and bracts ; rhachis very short.

Pedicels : 2·5 cm. long, very sparsely floccose or glabrous.

Calyx : small, about 2 mm. long with 5 triangular pointed lobes, glabrous or sparsely fringed with floccose hairs.

Corolla : obliquely campanulate, 3·5 cm. long, creamy-yellow with copious deep crimson markings ; lobes 5, rounded, crenulate.

Stamens : 10, unequal, 1·5-2·5 cm. long ; filaments glabrous.

Pistil : 2·3 cm. long ; ovary conoid, blunt, 7 mm. long, 4 mm. in diameter, glabrous ; style glabrous.

Capsule : ovoid, blackish, grooved, glabrous, 1 cm. long, 5 mm. broad.

Habitat : Mid-West Yunnan ; Chienchuan—Mekong and Mekong—Salween Divides. On moist rocky slopes and humus-covered boulders in side valleys and peaty moorlands, at 12,000-15,000 ft. altitude.

This very distinct plant is the only prostrate species in the subseries. The leaf shape recalls that of *R. bathyphyllum*. The creamy-yellow flowers are also unique in the subseries in having both stamens and ovary glabrous.

RHODODENDRON PROTEOIDES, *Balf. f. & W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 9 (1916), 264.

ILLUSTRATION—

HABIT: a much-branched shrub of 1-3 ft.; branches with very short internodes, the close-set leaves and the bud-scales persisting for several years.

LEAVES: lamina oblong, 2-4 cm. long, ·5-1 cm. broad; apex blunt; margin revolute; base attenuate; upper surface mat, rugulose, glabrescent with vestiges of juvenile hairs, the midrib grooved, the primary veins (about 10 on each side) and veinlets slightly impressed; under surface clad with a thick rufous woolly indumentum; petiole short and thick up to 5 mm. long, densely woolly.

INFLORESCENCE: a compact umbel of about 8 flowers with the bud-scales more or less persistent below the trusses.

PEDICELS: about 1 cm. long, densely woolly.

CALYX: small; lobes 5, hairy, 2-4 mm. long.

COROLLA: funnel-shaped, about 3 cm. long; pale yellow with crimson markings; lobes 5, unequal, the posterior ones about 8 mm. long, 1·2 cm. broad.

STAMENS: 10, unequal, 2-2·7 cm. long; filaments puberulous at the base.

PISTIL: 2·7 cm. long; ovary 3-4 mm. long, clad with long fasciately-branched hairs and shorter clavate glands; style thin, glabrous.

CAPSULE: more or less woolly-tomentose, truncate, about 1 cm. long, 5 mm. broad.

HABITAT: Yunnan; Mekong—Salween Divide. In open situations among boulders on stony pastures and on ledges of cliffs, at 12,000-13,000 ft. altitude.

Typical *R. proteoides* is very readily distinguished by its remarkably small revolute foliage and by its pale canary-yellow and copiously spotted flowers. Recent collections, however, show that the flower colour may vary from pale cream to canary-yellow and from creamy-white or yellow faintly flushed rose to a deeper rose tint. It is the smallest leaved species in the Taliense series. Its nearest ally is *R. lampropeplum*, a species, confined to the Muli region, with larger leaves and with a glabrous ovary.

RHODODENDRON RECURVUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 110.

Illustration—

Habit: a shrub 6-9 ft. high with stout branches; annual growths short; scale leaves of the foliage buds persisting many years; branches below the flower trusses 6 mm. in diameter, clad with a thick woolly rufous-orange indumentum.

Leaves: lamina thick, leathery, narrow lanceolate to oblanceolate, 4-9 cm. long, 1-2 cm. broad; apex acute or shortly acuminate; margin strongly recurved; base gradually tapered to the broad petiole; upper surface glossy, glabrescent, midrib grooved, primary veins about 18 on each side inconspicuous; under surface clad with a thick woolly rufous-orange indumentum, midrib slightly raised, rest of venation concealed; petiole about 1 cm. long, clad with thick indumentum like that of the branches.

Inflorescence: a racemose umbel of about 20 flowers; rhachis tomentose with long woolly hairs.

Pedicels: about 2 cm. long, stout, glandular, puberulous.

Calyx: very small, a little over 1 mm. long, more or less glandular and pubescent, margins of lobes gland-fringed and ciliate.

Corolla: funnel-shaped, about 2·8 cm. long, white flushed rose with a few posterior crimson spots; lobes 5, about 1 cm. long, 1·4 cm. broad, emarginate, crenulate.

Stamens: 10, unequal, 1-1·7 cm. long; filaments puberulous for half the length from base.

Pistil: about 2 cm. long; ovary cylindric-conoid, truncate, about 4 mm. long, densely glandular and pubescent; style glabrous or more or less pilose at base.

Capsule:

Habitat: North-Western Yunnan; mountains north-east of the Yangtze Bend, Kari Pass, Mekong—Salween Divide, at 10,000-13,000 ft. On boulder-strewn slopes, open thickets, and on open stony pastures.

This is a close ally of *R. Roxieanum*, differing from that species in having both pedicel and ovary glandular. It extends in North-West Yunnan from the Kari Pass to the Chungtien Plateau. In the former area a dwarf alpine variety of the species, var. *oreonastes*, Balf. f. & Forrest, is found. It has shorter (5 cm. or less), much narrower leaves and smaller flowers.

RHODODENDRON RECURVOIDES, *Tagg et Ward. Sp. nov.* (R. RECURVOIDES, as a name only in the *Year Book of the Rhododendron Association* (1931), p. 245. *Ward*, No. 7184.)

HABIT : a small compact shrub, 2-3 ft. high or at times as much as 5 ft. ; annual growths very short ; vegetative bud-scales persisting for many years ; shoots, perioles and outer bud-scales densely strigose (*with long stiff hairs many of which are tipped with glands*) ; shoots below inflorescences about 7 mm. in diameter.

LEAVES : lamina thick, leathery, lanceolate, oblanceolate or oval, 3-7 cm. long, 1-2 cm. broad ; apex obtuse or acute ; base cuneate ; margin recurved ; upper surface regulose, at first clad with whitish branched hairs and long-stalked (*strigose*) glands, later almost glabrous and glossy, midrib deeply grooved, *the groove towards the base filled with strigose hairs or glands*, primary lateral veins 10-12 on each side, deeply impressed ; under surface clad with a thick tawny tomentum (*of long-stalked fasciately branched hairs*), midrib not prominent, clad with fasciate hairs and strigose glands, the rest of the venation concealed by the indumentum which has no substratum of rosette hairs ; petiole ·5-1 cm. long, slightly grooved above, rounded below, and densely clad with long *strigose* gland-tipped hairs.

INFLORESCENCE : a compact umbel of 4-7 flowers, on a very short rhachis (*supported below by persistent bud-scales and bracts*).

PEDICELS : about 1·5 cm. long, densely clad with (*long-stalked*) strigose glands and also more or less pubescent (*with short simple hairs*).

CALYX : 5-8 mm. long ; lobes 5, unequal, lanceolate to ovate, densely clad on the back and margins with (*long-stalked*) strigose glands.

COROLLA : funnel-campanulate, about 3 cm. long, rose with deeper-coloured spots on the posterior side ; lobes 5, ovate, 1·5 cm. long, 1-1·5 cm. broad.

STAMENS : 10, unequal, 1·5-2·5 cm. long ; filaments villous for about 7 mm. of their length from base.

PISTIL : about 3·5 cm. long ; ovary about 6 mm. long, densely strigose with long-stalked glands ; style glabrous ; stigma lobulate.

CAPSULE :

HABITAT : Upper Burma, Seinghku Wang in the Valley of the Di Chu.

R. recurvoides is a very distinct and somewhat aberrant member of the Roxieanum subseries. In its habit and general appearance and in its glandularness it is certainly allied to *R. recurvum*. Its outstanding feature is the dense strigosity of

the shoots, petioles, and outer bud-scales. These parts in *R. recurvum* are clothed with a soft wool. The short annual growths and the persistence of the bud-scales for many years give to the shoots a very ragged look.

From *R. recurvum*, *R. recurvoides* differs also in its much larger calyx and in the nature of the indumentum of the leaf under surface. The substratum of rosette hairs present in *R. recurvum* is replaced in *R. recurvoides* by scattered short-stalked glands. Moreover, the glands on the calyx and ovary of *R. recurvum* are subsessile ; on *R. recurvoides* they are long-stalked and semi-bristly.

It is probable that at first all the strigose hairs on the various organs of *R. recurvoides* are tipped with glandular heads which later may fall off or wither.

The flower colour appears to be whitish or rose, certainly the flower is spotted. The few corollas remaining on the herbarium specimens are much withered and the ovaries are passing into immature fruit. Ward in his field note gives no hint as to flower colour. The flowers were probably too much withered to enable him to make a suggestion.

Geographically, *R. recurvum* and *R. recurvoides* are somewhat widely separated. *R. recurvum* comes from North-Western Yunnan, while the type locality of *R. recurvoides* is the Seinghku Valley, Upper Burma.

Apart from *R. recurvum* the only species within the series Taliense, with which *R. recurvoides* seems to have affinity, is the glandular *R. adenophorum* of the Adenogynum subseries. The points of contact are the relatively large calyx, glandular and gland-fringed ; the glandular ovary and the glandular leaf upper surface, but *R. adenophorum* is very different in habit, in leaf shape, and in the texture of the indumentum of the leaf under surface.

Outside the Taliense series the glandular, bristly or strigose shoots, pedicels, and calyx find a parallel in *R. crinigerum*, but here again the habit and size of the plant is distinctive, as is also the leaf size, shape, and the leaf indumentum.

The field note of Ward's 7184 reads as follows :—

" 25/7/26. Alt. 11,000 ft. Valley of the Di Chu. Foliage and fruit. A small compact bushy shrub, sometimes as much as 5 ft. high, but usually 2-3 ft. or less. Quite tiny plants have been a mass of flowers, which are borne in trusses of 4-7 very freely. Scattered about on the sunniest side of steep granite screes amongst boulders. Closely allied to No. 7123, and may be seen growing within a few feet of it, this species in the open, the other in the Abies forest or in thickets on the sheltered slope. The two species are, however, quite distinct.

" 7/11/26. Collected seeds which are coffee coloured."—*Ward* 7184.

H. F. T.

RHODODENDRON ROXIEANUM, *Forrest* in *Notes R.B.G. Edin.*, vol. 8 (1915), 344.

Illustration—

Habit : a shrub of 4-9 ft. ; the thick, densely woolly branches have short internodes and congested foliage, and retain for several years the scale-leaves of the foliage-buds ; shoots below inflorescences as much as 1 cm. thick.

Leaves : lamina linear narrow-lanceolate or oblanceolate, 5-10 cm. long, ·8-2 cm. broad ; apex acute or shortly acuminate ; margin recurved ; base tapered to the broad petiole ; upper surface shining, slightly rugulose, glabrescent with vestiges of juvenile tomentum particularly in the groove of the midrib, primary veins slightly impressed, not conspicuous ; under surface clad with a thick rust-coloured woolly indumentum, paler on the midrib, which is slightly raised and widened into the petiole, the rest of venation hidden ; petiole about 1 cm. long, 5 mm. broad, densely woolly like the young shoots.

Inflorescence : a compact many-flowered (10-15) racemose umbel ; rhachis about 1 cm. long, rusty tomentose.

Pedicels : about 1·3 cm. long, densely rusty or greyish tomentose, eglandular.

Calyx : minute, with 5 almost obsolete triangular teeth, tomentose like pedicel.

Corolla : campanulate, about 3 cm. long, creamy-white or white faintly flushed rose with crimson markings ; lobes 5, rounded, emarginate, about 1 cm. long and 1·2 cm. broad.

Stamens : 10, unequal, 1-2 cm. long ; filaments densely hairy from the base to beyond the middle.

Pistil : about 2·7 cm. long ; ovary 4 mm. long, cylindric-conoid, densely tomentose ; style glabrous or pilose at base, very slightly expanded below the small lobulate stigma.

Capsule :

Habitat : Yunnan ; Chungtien Plateau. Open moist pasture amongst rocks at 12,000 ft. altitude.

This can be regarded as the central species of the subseries. If taken in a broad sense it could be held to include *R. poecilodermum*, *R. recurvum* and *R. aischropeplum*. It also leads through *R. cucullatum* to a close relationship with the smaller-leaved members of the subseries.

RHODODENDRON RUSSOTINCTUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 129.

ILLUSTRATION—

HABIT : a shrub of 6-8 ft. with straight thin twigs ; young branches densely glandular, those a year old 3 mm. in diameter, glabrescent with the foliage bud-scales persisting for a year or two.

LEAVES : lamina thinly leathery, narrowly oblong, 5-9·5 cm. long, 1·5-2·5 cm. broad, narrowed to a shortly apiculate tip ; margin slightly recurved ; base obtuse or slightly rounded ; upper surface mat, glabrescent with traces of hairs and glands, midrib grooved, primary veins about 12 on each side ; under surface clad with a rusty-red indumentum, the surface loosely felty and more or less detersile, midrib prominent, very glandular, primary lateral veins inconspicuous ; petiole 1 cm. long, grooved above, more or less glandular and floccose.

INFLORESCENCE : a racemose umbel of about 8 flowers ; rhachis 8 mm. long, glandular and rufous-floccose.

PEDICELS : about 1·8 cm. long, glandular and floccose.

CALYX : small, about 1·5 mm. long, cupular, very glandular ; lobes 5, triangular, about half the length of the calyx.

COROLLA : campanulate, about 3·7 cm. long ; white flushed rose with few crimson spots ; lobes rounded, emarginate, somewhat crenulate, about 1·2 cm. long, 1·5 cm. broad.

STAMENS : 10, unequal, shorter than corolla and pistil ; filaments puberulous from base to above middle.

PISTIL : about 3 cm. long ; ovary conoid, truncate, grooved, 5 mm. long, densely glandular ; style glabrous.

CAPSULE :

HABITAT : North-Western Yunnan ; mountains north of Atuntzu. Open pine forests at 13,000 ft. altitude.

R. russotinctum is by no means a typical member of the subseries although it certainly has affinity with *R. tritifolium*. An outstanding feature is the comparatively long slender annual growths which give it an appearance very different from that of *R. Roxieanum* and its allies. Its general appearance suggests affinity with *R. Albertsenianum*, but that species is eglandular and has an unspotted corolla.

RHODODENDRON TRIPLONAEVIUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 62.

Illustration—

Habit : a shrub of 5-9 ft. with thick branches ; young shoots rufous-tomentose, eglandular.

Leaves : lamina thick, leathery, lanceolate or oblanceolate, 7-15 cm. long, 2-3·5 cm. broad ; apex shortly acuminate or obtuse ; margins slightly recurved ; base tapered and narrowly rounded ; upper surface mat, at maturity glabrous, midrib grooved, primary veins about 20 on each side slightly impressed ; under surface clad with a bistrate rust-coloured indumentum with a loosely felted surface, the upper stratum somewhat detersile revealing a paler smooth under stratum, midrib prominent, primary veins obscured ; petiole about 1 cm. long, at first tomentose like young stems.

Inflorescence : a short racemose umbel of about 12 flowers, outer bud-scales persisting during flowering ; rhachis pubescent, about 1 cm. long.

Pedicels : about 1 cm. long, pubescent and floccose, eglandular.

Calyx : minute, about 1 mm. long, glabrous but with shortly ciliate lobes.

Corolla : campanulate, about 3 cm. long, white or white flushed rose marked with a triradiate crimson blotch at the base ; lobes 5, rounded, crenulate, emarginate.

Stamens : 10, unequal, 1-2 cm. long ; filaments puberulous.

Pistil : about 2·5 cm. long ; ovary conoid, rufous-tomentose, 4 mm. long ; style glabrous.

Capsule : slightly curved, about 2 cm. long, 6 mm. broad.

Habitat : North-Western Yunnan, Mekong—Salween Divide. In open pine forests at 11,000-12,000 ft. altitude.

This species forms the centre of a small group distinguished from *R. Roxieanum* and its immediate allies by the flatter leaves with longer and less woolly petioles. The indumentum is also thinner. They inhabit an area more wooded and less exposed than the typical species of the subseries and their divergences appear to be in correlation with this different environment.

RHODODENDRON TRITIFOLIUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 63.

ILLUSTRATION—

HABIT : a shrub of 6-9 ft. ; branches at first clothed with a rust-coloured tomentum.

LEAVES : lamina elongated-lanceolate or oblanceolate, 10-15 cm. long, 2-4 cm. broad ; apex obtuse or acuminate ; base tapered to petiole ; upper surface glabrescent, midrib deeply grooved, primary veins about 18 on each side slightly impressed ; under surface clad with a bistrate cinnamon to rusty-brown loosely felty tomentum, the upper stratum often falling away in patches and exposing the greyish smooth under stratum, midrib prominently raised, rest of venation concealed ; petiole about 1 cm. long, at first clad like the young stem, then glabrescent.

INFLORESCENCE : a racemose umbel of about 15 flowers ; rhachis puberulous, about 1 cm. long ; bud-scales persisting during flowering period.

PEDICELS : 2·5 cm. long, floccose and glandular.

CALYX : very small, puberulous ; lobes 5, obscure, ciliate and sparsely glandular.

COROLLA : funnel-campanulate, about 4 cm. long, white suffused rose with basal crimson blotch and a few spots ; lobes 5, about 1·4 cm. long, 2 cm. broad, emarginate.

STAMENS : 10, 1·5-2·5 cm. long ; filaments puberulous at base.

PISTIL : about 3 cm. long ; ovary 4 mm. long, conoid, tomentose and glandular ; style glabrous.

CAPSULE : cylindric, nearly straight, about 2 cm. long, 5 mm. diameter, glabrous or with a few vestiges of hairs and glands.

HABITAT : North-Western Yunnan, Mekong – Salween Divide. In open thickets and pine forests, at 11,000-12,000 ft. altitude.

R. tritifolium is a twin species to *R. triplonaevium* and represents a glandular expression of that species.

TALIENSE SERIES

SUBSERIES TALIENSE

In the series Taliense the subseries of the same name is distinguished by the glabrous ovary found in all the species. The calyx is nearly always small, often a mere ring. The distinctly spotted corolla is white, varying sometimes to a rosy tint or to creamy-yellow. All appear to be plants of very slow growth, and few of them are likely to prove of service to horticulture.

The flower characters are so much alike in all that they are of little service for the discrimination of the species. There appear to be three groups in the subseries distinguished chiefly by the character of the indumentum. In some species, e.g. *R. flavorufum*, the indumentum shows remarkable variation from the young stages to maturity. In some cases its protean nature is such as to suggest that several species are in question instead of only one. It may be of a loose felty character without glands, as shown by the species in division A of the key. Again, it may be of a thinner consistency interspersed with glands or agglutinate with a secretion without obvious glands and then presenting an agglutinate appearance with a tendency to splitting at maturity. These conditions are represented in division AA. Finally, there are species where the dense woolly indumentum is overlaid, especially in the early stages, by a very definite skin-like covering or pellicle. This is characteristic of the species assembled in the division AAA. All the species are variable and tend to link up with their allies. The five outstanding species around which the others tend to revolve are :—*R. taliense*, *R. Przewalskii*, *R. phaeochrysum*, *R. flavorufum* and *R. Clementinae*.

The distribution of the subseries is centred in Yunnan. There is a development northwards through Muli into Szechuan, where in the south of Szechuan *R. sphaeroblastum* is found. This leads directly to the widespread *R. Przewalskii* of Szechuan and Kansu, and the former species may be regarded as a large-leaved, robust expression of the prevalent northern type. A western distribution in South-Eastern Tibet is represented by two species, viz. *R. doshongense* and *R. vellereum*.

TALIENSE SERIES

SUBSERIES TALIENSE

KEY TO THE SPECIES

A. Indumentum without pellicle, loose, not splitting, eglandular, rarely absent :
  B. Petioles more or less tomentose :
    C. Petioles densely tomentose :
      D. Leaf acute ; pedicels persistently tomentose . **taliense.**
      DD. Leaf obtuse ; pedicels glabrescent . . **Principis.**
  BB. Petioles glabrous :
    C. Ovary glabrous :
      D. Leaf smaller, usually under 4 cm. in breadth **Przewalskii.**
      DD. Leaf larger, 4 cm. or more in breadth **sphaeroblastum.**
    CC. Ovary slightly hairy . . . . . **Purdomii.**
AA. Indumentum without pellicle, thin, plastered, more or less agglutinate, more or less inclined to split, glands sometimes present :
  B. Leaves long elliptic (length of lamina more than twice its breadth) :
    C. Ovary glabrous . . . . . **phaeochrysum.** / **syncollum.**
    CC. Ovary with an apical tuft of white hairs **lophophorum.**
  BB. Leaves broad elliptic or ovate (length of lamina not exceeding twice its breadth) :
    C. Indumentum compactly agglutinate, not (rarely) splitting **agglutinatum.**
    CC. Indumentum hardly agglutinate, ultimately splitting into patches . . . . . **schizopeplum.**
    CCC. Indumentum crustaceous, not splitting, silvery **doshongense.**
AAA. Indumentum thick, spongy with a distinct surface pellicle which later tends to rupture, generally eglandular :
  B. Corolla lobes 5, stamens 10 :
    C. Petioles and indumentum eglandular :
      D. Leaves broadly elliptic, under surface indumentum at first yellowish, later becoming rusty-red and splitting **flavorufum.**
      DD. Leaves more or less ovate, under surface indumentum whitish . . . . . **aganniphum.**
      DDD. Leaves lanceolate to elliptic, under surface indumentum very spongy, silvery-white **vellereum.**
    CC. Petioles and indumentum glandular ; indumentum whitish . . . . . **glaucopeplum.**
  BB. Corolla lobes 6-7, stamens 12-14 . . **Clementinae.**

RHODODENDRON AGANNIPHUM, *Balf. f. & Ward* in *Notes R.B.G. Edin.*, vol. 10 (1917), 80.

ILLUSTRATION—

HABIT : a shrub of 2-4 ft. with thick branches ; shoots a year old about 4 mm. in diameter, glabrescent.

LEAVES : lamina oblong or ovate-oblong, 6-9 cm. long, 2·5-4 cm. broad ; apex broadly acute, mucronulate ; base rounded subcordate ; upper surface mat, slightly rugulose, glabrescent, midrib grooved, primary veins about 12 on each side impressed ; under surface whitish or yellowish-white clad with a compact persistent uniform indumentum, the surface forming a glossy skin, midrib raised and like the obscured primary veins clad with indumentum ; petiole up to 8 mm. long, grooved, glabrous except in the groove.

INFLORESCENCE : an umbel of about 12 flowers.

PEDICELS : about 8 mm. long, glabrous.

CALYX : a very short fleshy cup with undulate margin or with 5 small teeth, about 2 mm. long, floccose-ciliate.

COROLLA : funnel-campanulate, about 3·5 cm. long, white or white flushed rose, spotted crimson ; lobes 5, unequal, rounded, about 1·4 cm. long, 1·8 cm. broad, crenulate and emarginate.

STAMENS : 10, 1·2-2·2 cm. long, sparsely puberulous at the base.

PISTIL : about 2·5 cm. long, much shorter than corolla ; ovary about 5 mm. long, conoid, glabrous ; style glabrous.

CAPSULE : stout, oblong, straight, 1·4 cm. long, 6 cm. broad, 6-chambered.

HABITAT : South-Eastern Tibet and North-Western Yunnan ; Doker-La, Ka-gwr-pu. In rhododendron scrub at 14,000-15,000 ft. altitude.

R. aganniphum is very closely allied to *R. flavorufum* but has a smaller leaf, ovate rather than broadly elliptic, while the indumentum never shows the change of yellow to red of *R. flavorufum*. On the young leaf it is often a glossy white and does not split into patterns as does that of its ally. Its aspect is also suggestive of a small *R. Clementinae*.

RHODODENDRON AGGLUTINATUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 12 (1920), 88.

ILLUSTRATION—

HABIT : a shrub of 3-6 ft. with stout branches showing short annual growth ; branches below inflorescences about 4 mm. in diameter.

LEAVES : lamina leathery, oblong-oval or broadly obovate, 4-7·5 cm. long, 2-3·5 cm. broad ; apex obtuse to semi-rounded ; base obtuse, truncate or sometimes acute ; upper surface at maturity glabrous ; under surface tawny, clad with a thin agglutinate indumentum, the surface not a glossy pellicle, midrib prominent, more or less clad with agglutinate hairs or glabrescent and then yellowish, primary veins about 15 on each side obscured on leaf under side by the indumentum ; petiole about 1·5 cm. long, often yellowish, glabrescent.

INFLORESCENCE : a compact umbel of about 10-15 flowers ; rhachis about 5 mm. long, puberulous.

PEDICELS : about 1·5 cm. long, sparingly floccose.

CALYX : about 1 mm. long, with 5 obtuse shortly ciliate lobes.

COROLLA : about 3·5 cm. long, funnel-campanulate white, creamy-white or white tinged rose with crimson markings ; lobes 5, about 1·5 cm. long, 2 cm. broad, emarginate.

STAMENS : 10, unequal, 1-2 cm. long ; filaments hairy over the lower half.

PISTIL : about 2·5 cm. long, shorter than corolla, longer than stamens ; ovary 4 mm. long, conoid-cylindric, truncate, glabrous ; style glabrous.

CAPSULE :

HABITAT : South-Western Szechuan ; Muli Mountains. In rhododendron forests and open rocky slopes and thickets, at 11,000-13,000 ft. altitude.

R. agglutinatum is closely allied to *R. schizopeplum*. The under leaf indumentum appears to be copiously supplied with secretion, although at maturity there are no obvious glands. The indumentum is more compact and rarely splits in the fashion characteristic of *R. schizopeplum*.

RHODODENDRON CLEMENTINAE, *G. Forrest* in *Notes R.B.G. Edin.*, vol. 8 (1915), 343.

Illustration—

Habit : a shrub of 4-10 ft. ; branches thick, below inflorescences as much as 1 cm. in diameter.

Leaves : lamina oval to oblong-oval, 6-14 cm. long, 3·5-7 cm. broad ; apex rounded to obtuse, deflexed ; base rounded or cordulate ; upper surface dark mat green, minutely rugulose, at maturity glabrous, midrib grooved, primary veins slightly impressed ; under surface clad with a thick whitish to pale fawn felty indumentum which at first has a glossy surface skin which, as the leaf gets older, ruptures ; midrib prominently raised, clad like the rest of the under surface, primary veins obscured by indumentum ; petiole about 2 cm. long, thinly floccose or glabrous.

Inflorescence : a racemose umbel of about 15 flowers.

Pedicels : 2-3 cm. long, glabrous.

Calyx : minute, about 1 mm. long ; lobes triangular, glabrous.

Corolla : campanulate, creamy-white flushed rose to bright rose with deeper crimson markings, 4-4·5 cm. long ; lobes 6-7, rounded, 1·5-2 cm. broad, emarginate.

Stamens : 12-14, unequal, 1·3-2·3 cm. long ; filaments hairy at base.

Pistil : 3 cm. long ; ovary oblong, 7-8 mm. long, glabrous ; style glabrous.

Capsule : 2 cm. long, 1 cm. broad, cylindric, grooved, deep purple-black.

Habitat : North-Western Yunnan and South-Western Szechuan ; mountains of the Chungtien Plateau and around Muli. In open thickets at 11,000 ft. altitude.

This is a remarkable species in the subseries in that the calyx and corolla are usually 6 or 7-lobed and not 5. The stamens are usually 14. The broad oval leaf recalls that of *R. Przewalskii*, but its thick under leaf indumentum has a kid-glove consistency and is covered at first by a shining pellicle.

RHODODENDRON DOSHONGENSE, *Tagg* in *Notes R.B.G. Edin.*, vol. 15 (1927), 310.

ILLUSTRATION—

HABIT : a tangled shrub 2-3 ft. high ; branches stout ; shoots below flower-trusses about 7 mm. diameter, crustaceously floccose.

LEAVES : lamina oval to ovate or obovate, about 6 cm. long, 2-3 cm. broad ; apex obtuse to shortly acuminate ; base obtusely rounded or cordulate ; upper surface more or less rugulose, midrib grooved, lateral veins deeply impressed, about 12 on each side, the surface thinly clad with a white interrupted crustaceous indumentum ; under surface at first silvery white, later pale fawn, clothed with a thinish semi-agglutinate indumentum, midrib and primary veins prominent, clad like the rest of the leaf under surface ; petiole ·5-1 cm. long, flattish and grooved above, crustaceously floccose like the stem.

INFLORESCENCE : a racemose umbel of about 15 flowers ; rhachis about 1 cm. long, puberulous.

PEDICELS : 1·5-2 cm. long, sparsely floccose.

CALYX : very short, about 1 mm. long, a thickened rim with short, widely triangular teeth, sparsely floccose on the back.

COROLLA : campanulate, about 3 cm. long, pink with many dark-purple spots on the posterior side ; lobes 5, broadly rounded, about 1 cm. long, 1·7 cm. broad, slightly emarginate.

STAMENS : 10, unequal, 1-2 cm. long ; filaments glabrous.

PISTIL : 2-2·5 cm. long ; ovary conoid, glabrous ; style glabrous.

CAPSULE :

HABITAT : South-Eastern Tibet ; Doshong La. Along the top ridges in alpine regions at 12,000-13,000 ft. altitude.

A member of the Taliense subseries coming from much further west than the general area of the group. It has the facies of *R. taliense* and its allies, but possesses a thin crustaceous whitish indumentum on the under side of the leaf and a sprinkling of silvery indumentum above. While thus very different in its foliar appearance, its flowers suggest those of *R. taliense*. The indumentum apart from colour recalls that of *R. agglutinatum*.

RHODODENDRON FLAVORUFUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 65.

Illustration—

Habit: a shrub of 2-6 ft. with short, stout, eglandular branches; shoots below inflorescences 5-10 mm. in diameter.

Leaves: lamina oval, elliptic or oblong-oval, 4·5-12·5 cm. long, 2·5-6 cm. broad; apex rounded or broadly obtuse with very short mucro; base rounded or cordulate; upper surface somewhat glossy, slightly rugulose, glabrescent, midrib grooved and lined with withered hairs, primary veins about 12 on each side impressed; under surface at first covered all over with a pale yellow pellicled indumentum, later clad with reddish detersile patches formed by the splitting of the original pellicle, midrib raised, primary veins concealed; petiole 1-1·5 cm. long, at first clad with floccose hairs above, then glabrescent, eglandular.

Inflorescence: a short racemose umbel of 8-10 flowers.

Pedicels: unequal, 1·5-2 cm. long, glabrous.

Calyx: fleshy, glabrous, about 1 mm. long, with 5 minute teeth.

Corolla: funnel-campanulate, about 3 cm. long, white or soft rose with a few crimson spots; lobes 5, rounded, emarginate, 1 cm. long, 1·5 cm. broad.

Stamens: 10, unequal, shorter than corolla and pistil, 1·2-2 cm. long; filaments hairy from base to middle of length.

Pistil: 2·7 cm. long; ovary conoid, truncate, glabrous, about 4 mm. long; style glabrous.

Capsule: slightly oblique to pedicel, oblong-ovoid, glabrous, black, about 1·7 cm. long, 5 mm. in diameter.

Habitat: South-Eastern Tibet; Mekong—Salween Divide. On cliffs and rocky slopes and margins of pine forests, at 12,000-14,000 ft. altitude.

In leaf shape *R. flavorufum* recalls *R. Clementinae* but the corolla is 5-lobed. The indumentum of the young leaf is at first a yellowish shade, later it turns to a deep red, splitting into a variety of patterns. The isolated patches often fall away.

RHODODENDRON GLAUCOPEPLUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 46.

Illustration—

Habit : a shrub of 6-8 ft. ; branches stout, glabrous or with vestiges of glands.

Leaves : lamina ovate or oblong-oval, 5-8 cm. long, 2-3 cm. broad ; apex broadly acute, mucronulate ; base slightly cordate ; upper surface glabrous except in groove of midrib, minutely rugulose ; under surface greyish-white clad with an agglutinate indumentum, the surface at first forming a pellicle minutely punctulate with small glands ; petiole about 1 cm. long, glabrescent with vestiges of short-stalked glands and hairs.

Inflorescence : a racemose umbel of about 10 flowers.

Pedicels : 1·5 cm. long, glabrous or sparsely floccose.

Calyx : small, glabrous, or sparsely floccose.

Corolla : funnel-campanulate, 3·5 cm. long ; bright rose with conspicuous crimson markings ; lobes broadly rounded, 1·2 cm. long, 1·7 cm. broad.

Stamens : 10, unequal, 1·4-2 cm. long ; filaments densely hairy at base.

Pistil : 2·7 cm. long, shorter than corolla, longer than stamens ; ovary cylindric, truncate, glabrous ; style glabrous.

Capsule :

Habitat : Yunnan ; Mekong—Salween Divide. In cane brakes at 11,000 ft. altitude.

R. glaucopeplum is closely related to *R. aganniphum*. In *R. glaucopeplum* glands appear on the petioles and somewhat freely on the leaf under surface. Its ally is eglandular.

RHODODENDRON LOPHOPHORUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 95.

ILLUSTRATION—

HABIT : a shrub of 6-8 ft. with one-year-old branches about 3·5 mm. in diameter, glandular and floccose, older branches glabrescent.

LEAVES : lamina thinly leathery, oblong-elliptic or oboval, 5-10·5 cm. long, 2·5-3·5 cm. broad ; apex obtuse with tuberculate mucro ; base narrowly or broadly obtuse ; upper surface somewhat varnished showing vestiges of glands and floccose hairs, midrib grooved, primary veins 16 on each side slightly impressed ; under surface dull buff to tawny, clad with a smooth persistent gland-punctulate indumentum of agglutinate hairs, midrib prominent, primary veins more or less concealed ; petiole about 1 cm. long, densely glandular and sparse floccose.

INFLORESCENCE : a racemose umbel of about 8 flowers ; rhachis 5 mm. long, sparingly floccose.

PEDICELS : about 1·5-2 cm. long, sparingly floccose, eglandular.

CALYX : small, about 1-2 mm. long, glabrous.

COROLLA : campanulate, about 3·5 cm. long, white flushed rose, sparingly spotted ; lobes 5, rounded, emarginate, about 1·2 cm. long, 1·2 cm. broad.

STAMENS : 10, unequal, 1·7-2·4 cm. long ; filaments hairy at base.

PISTIL : about 2·8 cm. long ; ovary 3·5 mm. long, conoid, truncate, slightly grooved, glabrous save for a crest of white hairs at top ; style glabrous.

CAPSULE :

HABITAT : Yunnan ; mountains north of Atuntzu. In open pine forests at 13,000 ft. altitude.

This is a little known species of which the nearest ally is *R. phaeochrysum*. It differs in the smaller leaves, the more glandular petioles, smaller flowers and the presence of a tuft of white hairs on the top of the ovary.

RHODODENDRON PHAEOCHRYSUM, *Balf. f. & W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 10 (1917), 131.

(R. DICHROPEPLUM, *Balf. f. & Forrest.*)

ILLUSTRATION—

HABIT : a shrub of 6-15 ft. ; young shoots at first floccose and somewhat glandular, later glabrous.

LEAVES : lamina leathery, oblong-elliptic or narrowly oblong-ovate, 9-13 cm. long, 3-5 cm. broad ; apex narrowly obtuse or sub-acute ; base obtuse or semi-rounded, sometimes cordulate ; upper surface minutely rugulose, glabrous or with indumentum vestiges, midrib grooved, primary veins about 13 on each side, slightly impressed ; under surface pale to golden brown, clad with a persistent agglutinate compact indumentum, midrib prominent, primary veins obscure ; petiole about 1 cm. long, at first floccose and glandular, later glabrescent.

INFLORESCENCE : a racemose umbel of about 15 flowers.

PEDICELS : 1·5-2 cm. long, glabrous or sparsely floccose.

CALYX : minute, about 1 mm. long, glabrous.

COROLLA : funnel-campanulate, white flushed rose with deep crimson markings, about 4-5 cm. long ; lobes 5, broadly rounded, 1·5 cm. long, 2 cm. broad, emarginate, undulate.

STAMENS : 10, unequal, 1·5-2·5 cm. long ; filaments pubescent at base.

PISTIL : about 3 cm. long, about equalling length of corolla tube ; ovary 7 mm. long, conoid, grooved, glabrous ; style glabrous.

CAPSULE :

HABITAT : Yunnan ; mountains north-east of Yangtze Bend and on the Chungtien Plateau. In thickets at 11,000-12,000 ft. altitude.

R. phaeochrysum is distinguished from the Taliense-Przewalskii association by the elongate-elliptic leaf, by its tendency to glandularness and by its larger flowers. From the Flavorufum-Clementinae association it differs in leaf shape and in the lack of the pellicle characteristic of that association.

R. dichropeplum, described from imperfect material, is almost certainly only a state of *R. phaeochrysum*.

RHODODENDRON PRINCIPIS, *Bur. & Franch.* in *Journ. de Bot.*, vol. 5 (1891), 93.

ILLUSTRATION—*Ibid.*, Pl. 1.

HABIT : a small tree with thick shoots, those below inflorescences as much as 1 cm. in diameter, at first tawny tomentose.

LEAVES : lamina thick, oblong-elliptic to oblong-oboval ; apex obtuse ; base obtuse to rounded ; upper surface smooth to minutely rugulose, glabrescent, midrib deeply grooved towards the leaf base ; under surface, midrib included, clad with a thick, uniform, somewhat spongy tawny felt, midrib raised, rest of venation concealed ; petiole thick, 1-1·5 cm. long, densely clad like the leaf under surface.

INFLORESCENCE : flowers few ; rhachis very short, tomentose.

PEDICELS : about 1·5 cm. long, glabrous or with vestiges of floccose hairs.

CALYX : about 1·5 mm. long, with small angular teeth, sparse floccose on the margins.

COROLLA : funnel-campanulate, about 3·5 cm. long ; lobes 5, rounded, about 1 cm. long, 1·5 cm. broad, entire or emarginate.

STAMENS : 10, about 1·5-2·5 cm. long, the longest a little shorter than the pistil ; filaments puberulous at base.

PISTIL : about 2·7 cm. long ; ovary cylindric, truncate, about 6 mm. long, glabrous or with a few hairs ; style glabrous ; stigma small.

CAPSULE :

HABITAT : Tibet ; Lhassa to Batang. In alpine regions at 10,000 ft. altitude.

Of *R. Principis* very little is known except from one limited collection. It is not in cultivation. It is an outlier from the Taliense subseries and its geographical position is stated somewhat vaguely as being on the road from Lhassa to Batang.

RHODODENDRON PRZEWALSKII, *Maxim.* in *Mél. Biolog.*, vol. 9 (1877), 771.

(R. KIALENSE, *Franch.*)

ILLUSTRATION—

HABIT : a bush of 3-9 ft.

LEAVES : lamina leathery, oval-elliptic to ovate or obovate, 5-10 cm. long, 2-4 cm. broad ; apex obtuse, mucronulate ; base rounded to cordulate ; upper surface minutely rugulose with impressed primary veins ; under surface clad at first with a fawn to rusty tomentum, much of which later falls away ; petiole 1-2 cm. long, yellowish, glabrous.

INFLORESCENCE : a corymbose umbel of 12-15 flowers.

PEDICELS : glabrous, about 1-1·5 cm. long.

CALYX : short, glabrous with semi-rounded teeth.

COROLLA : campanulate, white to rose-pink, spotted, 3·5 cm. long ; lobes 5, rounded, emarginate.

STAMENS : 10, filaments glabrous or hairy at base.

PISTIL : ovary glabrous, deeply grooved ; style glabrous.

CAPSULE :

HABITAT : Western China, Kansu (abundant), and in parts of Szechuan and approaching the Yunnan frontier in the vicinity of Muli. A high alpine species abundant above the timber line at 10,000-14,000 ft. altitude.

R. Przewalskii differs from the central species of the series *R. taliense* in its broader and more elliptic leaves with glabrous petioles. In flower structure and colour and in its glabrous ovary it comes close to *R. taliense*. Its extension from Kansu into South-Western Szechuan brings it near the centre of the area of the series. Its affinities are more with the series Taliense than with such plants as *R. brachycarpum* and *R. Metternichii*. Closely related is *R. sphaeroblastum*, a grosser plant with larger leaves.

RHODODENDRON PURDOMII, *Rehd. & Wils.* in *Pl. Wils.*, vol. 1 (1913), 538.

Illustration—

Habit : a robust shrub with thick branches, young shoots puberulous ; perulae more or less persistent.

Leaves : lamina leathery, oblong-lanceolate to oblong-elliptic, 6-8 cm. long, 2·5-3·5 cm. broad ; apex acute or obtuse ; base cuneate ; margin revolute ; upper surface light-green, shining, slightly rugulose, glabrous, midrib impressed, primary veins 10-12 on each side slightly impressed or obscure ; under surface paler, glabrous, reticulations distinct, midrib raised, primary veins slightly raised ; petiole thick, 1-1·5 cm. long, at first puberulous, finally glabrous.

Inflorescence : a racemose umbel of 10 or more flowers ; rhachis about 1 cm. long, rufous-tomentose.

Pedicels : slender, 1-1·6 cm. long, densely clad with a whitish-grey hairy tomentum.

Calyx : small, cupular ; lobes 5, broadly triangular, 1-1·5 mm. long, sparsely pubescent.

Corolla : campanulate, 2·5-3 cm. long ; lobes 5, rounded, 1 cm. long.

Stamens : about 10, slightly shorter than corolla, 2-2·5 cm. long ; filaments hairy at base.

Pistil : about 2·5 cm. long ; ovary 4-5 mm. long, conoid, sparsely whitish-hairy ; style curved, glabrous.

Capsule :

Habitat : Mid China ; Shensi.

The position of this species is either in the Taliense series in the neighbourhood of *R. Przewalskii* or in the series Ponticum, subseries Caucasicum, not far from *R. brachycarpum*. The material at present available scarcely suffices to settle the point but on the whole favours the former as the nearest ally.

RHODODENDRON SCHIZOPEPLUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 131.

(R. FISSOTECTUM, *Balf. f. & Forrest.*)

ILLUSTRATION—

HABIT : a shrub of 3-12 ft. compactly branched ; branches up to a year old showing traces of juvenile floccose hairs.

LEAVES : lamina leathery, elliptic, oblong-elliptic or oblong, about 8 cm. long, 3·5 cm. broad ; apex obtuse ; base cordulate or rounded ; upper surface mat, minutely rugulose, midrib grooved, primary veins 12 on each side hardly grooved, the rest of the surface glabrescent with vestiges of fallen hairs ; under surface clothed with a somewhat agglutinate indumentum, at first white, later buff or brown and splitting irregularly, midrib stout, prominent, floccose-hairy, primary veins hidden by indumentum ; petiole about 1 cm. long, glabrescent with vestiges of juvenile floccose hairs.

INFLORESCENCE : a small compact umbel of 8-10 flowers.

PEDICELS : about 1 cm. long, glabrous or sparsely floccose, eglandular.

CALYX : minute, cupular, about 1·5 mm. long, glabrous.

COROLLA : campanulate, rose with deep crimson spots, about 3 cm. long ; lobes 5, 8 mm. long, 2 cm. broad, emarginate, undulate.

STAMENS : 10, unequal, shorter than corolla, 1·4-2 cm. long ; filaments prominently hairy half-way up.

PISTIL : about 2 cm. long ; ovary conoid, truncate, about 3·5 mm. long, glabrous ; style stout, glabrous.

CAPSULE :

HABITAT : North-Western Yunnan ; mountains north of Atuntzu. On the Li-ti-ping and on the Mekong—Salween Divide. In open thickets, rocky situations and margins of forests, at 12,000-14,000 ft. altitude.

R. schizopeplum deviates from *R. phaeochrysum* in its leaf shape, in the peculiar splitting of its indumentum, in its want of glands and in its smaller flowers. It differs from *R. taliense* in its glabrescent petioles as well as in its very distinct indumentum, but resembles it in leaf form and flower. Ample material now shows that *R. fissotectum* is not distinguishable from the present species.

RHODODENDRON SPHAEROBLASTUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 60.

ILLUSTRATION—

HABIT : a shrub of 3-6 ft. ; branches one year old 7 mm. in diameter, glabrous, greenish or purple.

LEAVES : lamina coriaceous, oval to oblong-oval, 7·5-15 cm. long, 4-6·5 cm. broad ; apex obtuse or sub-rounded ; base rounded ; upper surface minutely rugulose, midrib grooved, primary veins 12-14 on each side ; under surface clad with a thick cinnamon to rusty indumentum which is loosely woolly, midrib raised, primary veins concealed by indumentum ; petiole 1·5-2 cm. long, glabrous.

INFLORESCENCE : a racemose umbel of 12 flowers ; rhachis glabrous, 1 cm. long ; inflorescence bud very large, globose.

PEDICELS : about 1·5 cm. long, glabrous.

CALYX : short ; lobes 5, broadly triangular or ovate, glabrous on back, more or less fringed on margin.

COROLLA : funnel-campanulate, about 4 cm. long, white (in bud flushed rose), marked posteriorly with crimson spots but without basal blotch ; lobes 5, broadly rounded, 1·5 cm. long, 2·3 cm. broad, margin undulate.

STAMENS : 10, unequal, 1·5-2 cm. long ; filaments puberulous.

PISTIL : 2·5-3 cm. long ; ovary conoid, truncate, 7 mm. long, glabrous ; style glabrous.

CAPSULE : oblong, cylindric, 2 cm. long, 7 mm. broad, glabrous.

HABITAT : South-Western Szechuan ; mountains around Muli. On rocky slopes in open thickets and openings in conifer forests, at 11,000-14,000 ft. altitude.

R. sphaeroblastum finds its nearest ally in *R. Przewalskii*. It is of more robust habit and has larger leaves more thickly tomentose on the under surface.

RHODODENDRON SYNCOLLUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 142.

ILLUSTRATION—

HABIT: a shrub of 5-10 ft.; young branches floccose and glandular, those a year old more or less glabrescent.

LEAVES: lamina lanceolate or oblong-lanceolate, 6-9 cm. long, 2-3·3 cm. broad; apex obtuse to acuminate, beaked; base obtuse; upper surface very slightly rugulose, glabrescent, midrib grooved lined with vestiges of hairs, primary veins inconspicuous; under surface pale buff to cinnamon clad with a thin somewhat crustaceous agglutinate indumentum which sometimes shows splitting of the surface, midrib prominent, primary veins concealed by indumentum; petiole about 1 cm. long, at first floccose, later glabrescent.

INFLORESCENCE: a terminal umbel of about 15 flowers; rhachis about 1 cm. long, floccose.

PEDICELS: about 2 cm. long, floccose.

CALYX: a small fleshy rim with 5 slightly pointed lobes, floccose.

COROLLA: campanulate, about 3·5 cm. long, washed rose deepest on margins with small crimson spots within on the posterior side; lobes 5, about 1 cm. long, 2·3 cm. broad, undulate and crenulate.

STAMENS: 10, unequal, 1·5-2·3 cm. long; filaments widened at base and hairy upwards for about half their length.

PISTIL: about 2·5 cm. long; ovary about 4 mm. long, conoid-cylindric, truncate, glabrous; style glabrous.

CAPSULE:

HABITAT: West-North-Western Yunnan; mountains north of Atuntzu and on the Mekong—Salween Divide; South-Eastern Tibet; Ka-gwr-pu. In open rhododendron forests and thickets, at 11,000-13,000 ft. altitude.

This is a species closely allied to *R. phaeochrysum*, of which it may prove in cultivation to be only a marked variety. It differs from *R. phaeochrysum* in the smaller leaves, in the more compact indumentum, a feature probably due to more copious secretion, and in the definitely smaller flowers.

RHODODENDRON TALIENSE, *Franch.* in *Bull. Soc. Bot. France*, vol. 33 (1886), 232.

Illustration—

Habit : a loosely branched shrub of 4-8 ft. with thick branches; stems below inflorescences about 7 mm. in diameter ; young shoots woolly-tomentose, later glabrescent.

Leaves : lamina oblong-ovate to broadly lanceolate, 4-10 cm. long, 2-3·5 cm. broad ; apex broadly acute to shortly acuminate, sharply pointed by inrolling of margin over tip of midrib ; base blunt or rounded to sub-cordate ; upper surface dark green, rugulose, glabrescent with vestiges of a juvenile tomentum, midrib grooved ; under surface clad with a tawny felt-like indumentum with a soft non-agglutinate, non-pellicled surface, midrib prominent, primary veins obscured by indumentum ; petiole 1-1·5 cm. long, felty-tomentose.

Inflorescence : a compact umbel of 10-15 flowers ; rhachis about 1 cm. long, pubescent.

Pedicels : 1·5-2 cm. long, densely tomentose.

Calyx : 2-3 mm. long, with 5 small ovate or triangular lobes.

Corolla : funnel-campanulate, 3·5 cm. long, creamy-yellow or creamy, flushed rose with deep crimson markings ; lobes 5, rounded, crenulate.

Stamens : 10, unequal, 1·5-2·5 cm. long ; filaments hairy over the lower third of length.

Pistil : 2-2·5 cm. long, equalling corolla tube ; ovary 6 mm. long, glabrous ; style glabrous.

Capsule :

Habitat : Western Yunnan ; western and eastern flanks of the Tali Range. In open and rocky situations, mountain meadows and ravines and side valleys, at 10,000-12,000 ft. altitude.

R. taliense is readily distinguished from the species of its subseries by the densely tomentose pedicels and petioles. In its typical form it is confined to the Tali Range.

RHODODENDRON VELLEREUM, *Hutch. MS.*

ILLUSTRATION—

HABIT : a bush or small tree of 6-15 ft. ; shoots below inflorescences about 5 mm. in diameter, at first thinly floccose, quickly glabrous.

LEAVES : lamina thick, leathery, oblong-elliptic to oblong-lanceolate, 6-11 cm. long, 2-4·5 cm. broad ; apex acute or obtuse ; base rounded or rarely cordulate ; upper surface smooth to minutely rugulose, glabrous at maturity, midrib grooved, primary veins 14-16 on each side impressed ; under surface silvery-white to fawn clad with a thickish spongy indumentum, the surface forming a kid-glove-like pellicle which tends to split, midrib raised, more or less clothed with indumentum, rest of venation concealed ; petiole 1·5-2 cm. long, grooved and floccosely tomentose above, glabrescent below.

INFLORESCENCE : a short umbellate raceme of 15-20 flowers rhachis about 1 cm. long.

PEDICELS : "crimson," 1·5-2 cm. long, glabrous or with a few hair flocks.

CALYX : minute, about 1 mm. long ; lobes 5, forming an undulate rim fringed with short floccose hairs.

COROLLA : funnel-campanulate, 3·5 cm. long, white or flushed rose with purple or carmine spots ; lobes 5, about 1 cm. long, 1·8 cm. broad, emarginate.

STAMENS : 10, unequal, 1·5-2·5 cm. long ; filaments hairy at base.

PISTIL : 2·5 cm. long ; ovary oblong-conoid, 7 mm. long, glabrous ; style glabrous.

CAPSULE : narrow, cylindric, grooved, glabrous, distinctly curved, 5-6-chambered.

HABITAT : South-Eastern Tibet ; Tsangpo Valley. In steep sheltered slopes among spruce, larch and birch, at 10,000-14,000 ft.

This species from the upper Brahmaputra (Tsangpo Valley) is an outlier from the centre of the region of the Taliense series. Its nearest ally is *R. agganiphum*, from which it differs in the shape of the leaf and in the more spongy indumentum and in the longer curved fruit.

TALIENSE SERIES

SUBSERIES WASONII

The Wasonii subseries is restricted to the provinces of Szechuan and Kansu and is limited in the number of species. As a subseries of the Taliense series it is characterised by somewhat broad leaves, by the lack of conspicuous glands, and by the densely tomentose ovaries. In general appearance the species of this subseries approach those of the subseries Taliense, but in the latter subseries the species have glabrous ovaries. The Adenogynum subseries is readily distinguished from the Wasonii subseries by the calyx, which in the former is usually a conspicuous one and always glandular. The subseries Roxieanum is very different in habit and the inflorescence is a more compact one.

All six species are in cultivation and, with the exception of *R. rufum*, appear to be faster growers than the majority of the species of the subseries Taliense.

KEY TO THE SPECIES

A. Leaf indumentum thin, scurfy, not continuous, detersile :
  B. Terminal leaf-bud ovate ; outer scales shortly acuminate hardly exceeding the inner scales . . . **inopinum.**
  BB. Terminal leaf-bud elongate ; outer scales very long, acuminate, twice as long as the inner scales **paradoxum.**
AA. Leaf indumentum dense, woolly or felty, continuous, persistent :
  B. Leaves bullate . . . . . **Wiltonii.**
  BB. Leaves not bullate :
    C. Leaves ovate ; base rounded to cordulate . **Wasonii.**
    CC. Leaves oblong to obovate ; base more or less cuneate **Weldianum.**
    CCC. Leaves oblong to obovate, base rounded . **rufum.**

RHODODENDRON INOPINUM, *Balf. f.* in *Notes R.B.G. Edin.*, vol. 15 (1926), 109.

Illustration—

Habit: a low bush with straight branches; one-year-old branches about 3·5 mm. in diameter; terminal foliage-buds ovate, about 1 cm. long, 5 mm. broad at base, the outer scales broadly and shortly acuminate, floccose on the back.

Leaves: lamina oval-oblong, 4-12 cm. long, 2-4 cm. broad; apex acute to acuminate; base rounded or broadly obtuse; upper surface dark green, minutely rugulose, midrib shallowly grooved, primary veins about 13 on each side impressed; under surface smooth, pale green, clad with patches of drab-coloured more or less detersile indumentum, midrib prominent; petiole 1-1·5 cm. long, grooved above, glabrous or with vestiges of indumentum.

Inflorescence: a racemose umbel of about 10 flowers; rhachis more or less puberulous, about 7 mm. long.

Pedicels: about 2 cm. long, densely clad with a loose whitish floccose tomentum.

Calyx: about 1·5 mm. long, floccose-pubescent, the margin undulate with 5 rounded lobes.

Corolla: funnel-campanulate, about 2·5 cm. long, creamy-white with a deep crimson basal blotch and some crimson spots; lobes 5, rounded, entire or slightly crenulate, about 8 mm. long, 1·5 cm. broad.

Stamens: 10, unequal, 1·2-2·3 cm. long; filaments puberulous at base; anthers black-purple.

Pistil: about 3·3 cm. long; ovary conoid, about 6 mm. long, densely tomentose; style green or whitish, glabrous.

Capsule:

Habitat: Western China, Szechuan.

The young shoots of *R. inopinum* with their floccose scurfy indumentum, at first white, later brownish, are very conspicuous when growth starts. Its nearest ally is *R. paradoxum*, which has a somewhat similar thin, patchy, detersile leaf indumentum, but *R. paradoxum* is readily distinguished by the much longer terminal foliage-buds and by the more deeply impressed primary veins which give a semi-bullate leaf surface. The flower colour of *R. inopinum* varies from white to cream, and forms are in cultivation in which the blotch at the base of the corolla is absent.

RHODODENDRON PARADOXUM, *Balf. f.* in *Notes R.B.G. Edin.*, vol. 15 (1926), 114.

ILLUSTRATION—

HABIT: a small shrub 4-7 ft. high, compactly branched; year-old branches about 5 mm. in diameter clad with a dense white scurfy indumentum; older branches glabrous; foliage-buds tapered, conical, about 2 cm. long, 5 mm. broad at base, the outer scales densely woolly, awl-shaped with long, curved tips much exceeding in length the inner, broadly-ovate scales.

LEAVES: lamina leathery, oblong, 5-12 cm. long, 3-5 cm. broad; apex obtuse or somewhat rounded, more or less beaked; base broadly obtuse or rounded; upper surface rugulose, glabrous at maturity, midrib grooved, primary veins about 12 on each side, conspicuously grooved; under surface pale green, clad with a loose patchy indumentum of grey or brownish hairs, midrib and primary veins prominent; petiole about 2·5 cm. long, stout, grooved, at first clad with a semi-woolly tomentum.

INFLORESCENCE: a racemose umbel of about 8 flowers; rhachis about 1·2 cm. long, slightly floccose.

PEDICELS: about 2·5 cm. long, densely clad with a tomentum of white hairs.

CALYX: about 4 mm. long, tomentose like pedicel; lobes 5, rounded or angular.

COROLLA: obliquely campanulate, 4 cm. long, white with a dark-crimson basal blotch breaking into short lines of spots; lobes 5, about 1·5 cm. long, 2 cm. broad, emarginate.

STAMENS: 10, unequal, 1·8-3·2 cm. long; filaments puberulous at base; anthers black-purple.

PISTIL: about 3·7 cm. long; ovary 5 mm. long, cylindric, grooved, truncate, densely clad with adpressed hairs; style glabrous, yellowish.

CAPSULE: narrow cylindric, 2-2·5 cm. long, about 4 mm. in diameter, green beneath a dense more or less persistent brown tomentum.

HABITAT: Western China, Szechuan.

The nearest allies of *R. paradoxum* are *R. inopinum* and *R. Wiltonii*. From the former it is readily distinguished by the terminal foliage-buds and semi-bullate leaves, and from the latter by the leaf shape and the thin detersile leaf indumentum of *R. paradoxum*.

RHODODENDRON RUFUM, *Batal.* in *Act. Hort. Petrog.*, vol. 11 (1891), 490.

Illustration—

Habit: a shrub or small tree; shoots at first thinly whitish-floccose, quickly glabrous, stout, those below inflorescences about 7 mm. diameter.

Leaves: lamina elliptic, oblong, oblong-ovate or oblong-obovate, 7-11 cm. long, 3-4·5 cm. broad; apex obtuse or sub-acute; base obtuse to sub-rounded; upper surface at maturity glabrous, minutely and slightly rugulose, midrib grooved; under surface clad with a loosely woolly tawny to rust-brown tomentum, midrib also tomentose, prominent; primary veins concealed by indumentum; petiole stout, 1·5-2 cm. long, clad with a thin grey to rufous floccose indumentum or almost glabrous.

Inflorescence: a racemose umbel of 6-10 flowers; rhachis short, about 6 mm. long.

Pedicels: about 1·5 cm. long, densely floccose greyish to rufous.

Calyx: minute, about 1 mm. long, with 5 broadly angular teeth, floccose like pedicel.

Corolla: funnel-campanulate, 2·5-3 cm. long, white or pinkish-purple, spotted crimson, puberulous within at base; lobes 5, unequal, about 8 mm. long by 10 mm. broad.

Stamens: 10, unequal, 1·5-2·5 cm. long; filaments flattened and puberulous at base; anthers pale.

Pistil: as much as 3 cm. long; ovary ovoid, densely clad with greyish to rufous woolly hairs; style glabrous or more or less hairy at base; stigma small.

Capsule: oblong, woody, 2-2·5 cm. long, 7 mm. broad, clad with a brownish deciduous tomentum, 5-6-chambered.

Habitat: Szechuan and Kansu. In forests at 10,000-11,500 ft. altitude.

This species is akin to *R. Wasonii* and even nearer to *R. Weldianum*.

RHODODENDRON WASONII, *Hemsl. & Wils.* in *Kew Bull.* (1910), 105.

ILLUSTRATION—*Bot. Mag.*, vol. 153 (1927), t. 9190.

HABIT: a bush about 4 ft. high; branches straight, those below inflorescences 7-10 mm. in diameter, at first hoary and scurfily tomentose and sparsely clad with long-stalked glands, later glabrescent; foliage-buds 1·5-2 cm. long, the outer bud-scales awl-shaped, densely clad with a whitish to pale fawn tomentum.

LEAVES: lamina oval, ovate or broadly lanceolate, 5-10 cm. long, 2·5-4·5 cm. broad; apex acute to shortly acuminate, often cuspidate; base obtuse to rounded or cordulate; upper surface a dark glossy green, at first sparsely-floccose and glandular, later glabrescent, midrib slightly sunk, primary veins about 12 on each side impressed; under surface clad with a uniform somewhat scurfy felt, on young leaves white but changing later to a bright brown or rusty-red, midrib prominent, primary veins slightly raised; petiole 5-12 mm. long, grooved and quickly glabrescent above.

INFLORESCENCE: a lax corymb of about 10 flowers; rhachis about 1 cm. long, floccose.

PEDICELS: 1·5-2·5 cm. long, densely floccose tomentose.

CALYX: about 3 mm. long, with 5 small sharp-pointed triangular teeth, the whole white to fawn tomentose.

COROLLA: funnel-campanulate, 3-4 cm. long, pinkish rose or creamy-white and spotted within.

STAMENS: 10, unequal, the longest about 2 cm.; filaments hairy in the lower half; anthers black.

PISTIL: about 3 cm. long; ovary 5 mm. long, white to brownish tomentose; style pale yellow.

CAPSULE:

HABITAT: Western Szechuan; near Tatsienlu. On rocks in conifer forests at 9000-11,000 ft. altitude.

R. Wasonii is distinguished from *R. Wiltonii* by the relatively smooth upper surface of the leaf, by the less woolly and brighter colour of the under surface of mature leaves and by the leaf shape. As in *R. Wiltonii*, the colour contrast of the leaf indumentum of the young leaves (white) and of older leaves (rusty) is notable.

There are two forms in cultivation, one with creamy-yellow flowers and one with pinkish flowers. The latter has received the name *R. rhododactylum*.

RHODODENDRON WELDIANUM, *Rehd. & Wils.* in *Pl. Wilsonianae*, vol. 1 (1913), 532.

Illustration—

Habit : a shrub of 6-14 ft. with thick branches which at first are floccose-tomentose and later glabrescent ; foliage-buds ovoid, bud-scales hairy outside.

Leaves : petiolate, 6-11 cm. long, 3-4 cm. broad ; lamina leathery, oblong-elliptic ; apex acute or shortly acuminate ; base tapered or rarely rounded ; upper surface glabrous, somewhat glossy, slightly rugulose, midrib grooved, primary veins 10-12 on each side impressed ; under surface clad with a dense woolly tomentum which at first is whitish and later a rusty-brown, midrib prominent, rest of venation concealed ; petiole 1-1·5 cm. long, thick, at first floccose-tomentose, later almost glabrous.

Inflorescence : an umbellate raceme of 6-12 flowers.

Pedicels : 1-1·5 cm. long, clad with a rufescent floccose-wool.

Calyx : obsolete.

Corolla : funnel-campanulate, 2·2 cm. long ; tube 1·2 cm. long ; lobes broadly ovate, 9-10 mm. long.

Stamens : about 2 cm. long ; filaments hairy over the lower fourth of their length.

Capsule : cylindric, 2-2·5 cm. long, 7-9 mm. in diameter, woolly.

Habitat : Western Szechuan ; west of and near Wên-ch'uan Hsien. In woodlands at 9000-10,000 ft. altitude.

R. Weldianum is distinguished from *R. Wasonii* and *R. Wiltonii* by its larger oblong-obovate or oblong-elliptic leaves. Apart from this difference in leaf shape and size it is at once separated from the former by the dense loose woolly indumentum and from the latter by the relatively smooth non-bullate upper surface. It comes very near to *R. rufum*, and more ample material will probably show that it is equivalent to that species.

RHODODENDRON WILTONII, *Hemsl. & Wils.* in *Kew Bull.* (1910), 107.

Illustration—

Habit: a bush of 3-15 ft.; branches below inflorescences 7-10 mm. in diameter; young shoots clad with a greenish-white felt, older shoots glabrescent; terminal foliage-bud about 1 cm. long, with one or two outer scales much longer than the inner scales and curved to the apex; all the outer scales clad with a white wool.

Leaves: lamina leathery, oblong-obovate to oblanceolate, 5-12 cm. long, 2-4 cm. broad; apex obtuse; base wedge-shaped or more or less rounded; upper surface glossy, midrib and primary veins deeply impressed giving a semi-bullate rugose surface which at first is sparse-floccose and glandular, but glabrous in the second year; under surface felted, at first greyish-white, later cinnamon-brown, midrib and primary veins prominent, the latter about 10 on each side of midrib; petiole 1-3 cm. long, rounded, not conspicuously grooved, woolly-tomentose at first, later glabrescent.

Inflorescence: a racemose umbel of about 10 flowers; rhachis pubescent.

Pedicels: 1·5-2·5 cm. long, densely woolly-tomentose.

Calyx: 2-3 mm. long, with 5 triangular teeth, densely tomentose.

Corolla: funnel-campanulate, whitish or flesh-pink with red spots or with a blotch, 3-3·5 cm. long; lobes 5, broadly rounded, 1 cm. long, 1·5-2 cm. broad, emarginate.

Stamens: 10, unequal, 1·5-3 cm. long; filaments hairy over the lower third.

Pistil: about 3 cm. long; ovary cylindric, 5 mm. long, densely tomentose; style glabrous.

Capsule: cylindric, slightly curved, clad with a brownish tomentum or glabrescent, 2·5 cm. long, about 5 mm. in diameter.

Habitat: Western Szechuan. In thin woods and thickets at 7000-9000 ft. altitude.

R. Wiltonii with leaves bullate and glossy above and felted reddish-brown below is a handsome foliage plant. In its general appearance it recalls somewhat the aspect of some of the Haematodes subseries but has a very different flower. From other members of the Wasonii subseries it is readily distinguished in foliage by the tapered leaf base and the marked rugosity of the leaf upper surface. The petiole is longer than that of *R. Wasonii* and much more woolly. Two forms appear to be in cultivation, one with much broader leaves than the other.

THOMSONII SERIES

The series finds its centre of distribution in the two Chinese provinces of Yunnan and Szechuan. It extends into the adjoining alpine regions of Tibet and Upper Burma and is also represented by outliers in the Eastern Himalaya. *R. Thomsonii*, one of the Himalayan representatives, has long been in cultivation and typifies very well the general characteristics of this extensive series. In habit its members are of medium height—there are no large trees and no very dwarf species. The leaf is usually broad in proportion to length, more or less rounded at the ends, frequently cordate, with a smooth often glaucous upper surface. To the eye the leaf under surface of the majority of the members appears to be glabrous, but a lens often discloses the presence of fine hairs or minute glands or their vestiges. The tendency of the series to the formation of glands is very marked; it is particularly noticeable in the frequent development of stalked glands on the pedicels; glands are also found in many species encrusting the ovary and fringing the calyx lobes; the style, too, may be glandular even to the tip. The inflorescence is usually few-flowered, not forming a dense truss. The calyx, a large one in the subseries Thomsonii, is conspicuous in other subseries, but is relatively small in the subseries Selense and Martinianum. Where it is large it is often coloured and may form a large persistent cup around the fruit. There is no general type of corolla-form in the series; saucer-shaped, funnel-shaped, bell-shaped, and broadly tubular flowers are represented; the 5-lobed corolla tends to be fleshy, and correlated with that consistency is generally an absence or weak development of spotting. The ovary may be glabrous to densely glandular but an entirely hairy ovary does not occur in the series. The fruit varies from the short stout blunt capsule characteristic of the subseries Thomsonii to the more slender sickle-shaped capsule of the subseries Selense and Campylocarpum.

Among the elepidote rhododendrons characterised by lack of indumentum, the Thomsonii series invites comparison in the first place with the series Fortunei. It is distinguished from that series by its leaf shape and by its pentamerous flower. In the Fortunei series the leaf is more elongated, while the corolla is usually 6-8 partite. In the species constituting the Barbatum and Irroratum series there are some which lack an indumentum on the under surface; these are readily separated from the Thomsonii series by the shape and consistency of their leaves.

There is a link however between the subseries Selense (the least typical of the Thomsonii series) and certain members of the Adenogynum subseries of the Taliense series, and the line of division between them has been drawn somewhat arbitrarily.

The series is divided into five approximately phyletic subseries. The central subseries Thomsonii is a natural one with large calyx and broad tubular flowers. The subseries Souliei deviates in its flat open corolla and glandular style. The subseries Campylocarpum has well-marked bell-shaped flowers. The subseries Selense is the most divergent both in leaf and flower from the Thomsonii type. The subseries Martinianum is somewhat aberrant, but in *R. eurysiphon* it approaches *R. Stewartianum.*

KEY TO THE SUBSERIES

1. Leaf leathery, more or less broadly elliptic, more or less rounded at both ends.
   Calyx very *large, cupular,* often coloured.
   Corolla broadly tubular to bell-shaped, fleshy, usually red, sometimes spotted, *large nectar pouches.*
   Style glabrous ; ovary *glabrous* or glandular.
   Fruit short, broad, often coloured, rarely bent **Thomsonii.**
2. Leaf *chartaceous,* rigid, narrow-elliptic, more or less rounded at both ends.
   Calyx small, not exceeding 3 mm.
   Corolla *bell-shaped,* pink, more or less spotted but without conspicuous nectar pouches.
   Style glabrous or glandular only at base ; ovary glandular.
   Fruit cylindric, slightly curved . . . **Martinianum.**
3. Leaf leathery, orbicular to elliptic, rounded at both ends.
   Calyx distinct, not cupular, gland-fringed.
   Corolla *saucer to bowl-shaped,* usually yellow, sometimes blotched but not spotted.
   Style *glandular to apex* ; ovary densely glandular.
   Fruit stout, slightly curved, rarely slender . . **Souliei.**
4. Leaf leathery, orbicular to elliptic, rounded at both ends.
   Calyx small, not cupular, not exceeding 5 mm.
   Corolla *bell-shaped,* yellow or white to rose, sometimes blotched but not spotted.
   Style glabrous or glandular only at base ; ovary glandular.
   Fruit *slender,* much curved, *sickle-shaped* **Campylocarpum.**
5. Leaf *chartaceous,* oblong to elliptic, apex rounded or pointed.
   Calyx usually small, not cupular, not exceeding 1 cm.
   Corolla *funnel-shaped,* usually rose or white, sometimes blotched, rarely spotted.
   Style glabrous or glandular only at base ; ovary glandular.
   Fruit *very slender,* much curved, *sickle-shaped* . **Selense.**

H. F. T.

THOMSONII SERIES

SUBSERIES CAMPYLOCARPUM

The subseries Campylocarpum lies between the subseries Souliei and Selense. It is distinguished from the first by the bell-shaped corolla which lacks the flat open appearance of the corolla of *R. Souliei* and its allies. Moreover, the style in this subseries is never glandular to the tip. The subseries Selense with its thinner chartaceous more oblong and pointed leaves, and with its infundibular corolla of thin texture, is likewise readily discriminated from the present subseries. Further, the colour yellow is not infrequent in both the Souliei and the Campylocarpum subseries associated with fleshy texture, whereas the prevailing colour in the subseries Selense is rose to white.

The yellow-flowered species of this subseries have distinct affinity with *R. Wardii* and its allies, whereas the rose-coloured species are probably akin to *R. Souliei*. The distribution is confined to South-Western China and the adjoining parts of Tibet and Upper Burma, with *R. campylocarpum* itself as a Himalayan outlier.

KEY TO THE SPECIES

A. Flowers yellow :
  B. Leaves ovate to ovate-elliptic.
    Leaf length more or less 6·5 cm., breadth more or less 4 cm.
    Style glabrous or glandular at base . . **campylocarpum.**
  BB. Leaves more or less orbicular :
    C. Leaves more or less 5 cm. diameter (length 5, breadth 4).
      Style usually glandular to more or less one-third its length **caloxanthum.**
    CC. Leaves more or less 4 cm. diameter (length 4, breadth 3).
      Style glabrous . . . . . **telopeum.**
AA. Flowers rose to rose-red :
  B. Leaves more or less ovate, thin coriaceous.
    Calyx 2 mm.
    Filaments glabrous . . . . **callimorphum.**
  BB. Leaves more or less orbicular, thick coriaceous.
    Calyx 2-3 mm.
    Filaments glabrous . . . . . **cyclium.**
  BBB. Leaves more or less orbicular, chartaceous.
    Calyx 5-6 mm.
    Filaments puberulous . . . **hedythamnum.**
AAA. Flowers white :
    Leaves more or less orbicular, thick coriaceous, diameter more or less 3 cm. . . . . **myiagrum.**

RHODODENDRON CALLIMORPHUM, *Balf. f. & W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 10 (1917), 89.

ILLUSTRATION—*Bot. Mag.*, vol. 145 (1919), t. 8789.

HABIT : a shrub of 4-9 ft. ; branches below inflorescences about 4 mm. in diameter ; young shoots at first clad with stalked glands, later glabrous.

LEAVES : lamina thinly leathery, broadly elliptic or broadly ovate, 3-7 cm. long, 2-4·5 cm. broad ; apex rounded ; base cordulate or subtruncate ; upper surface dark green, glossy, glabrous except for scattered vestiges of hairs, midrib grooved, primary veins about 10 on each side slightly impressed ; under surface glaucous, semi-papillate, minutely punctulate with gland vestiges, midrib raised and sparsely glandular, primary veins and vein reticulations evident but scarcely elevated ; petiole about 1·5 cm. long, glandular with stalked glands which extend to the base of the leaf margin.

INFLORESCENCE : a terminal umbel of 5-8 flowers.

PEDICELS : about 2 cm. long, densely clad with short-stalked glands.

CALYX : minute, about 2 mm. long, with 5 unequal triangular lobes, glandular.

COROLLA : openly campanulate, 3·5-4·5 cm. long, soft rose when fully open, deep rose in bud, the base of the tube somewhat pouched and marked inside with a crimson blotch ; lobes 5, rounded, emarginate, about 1·2 cm. long, 1·8 cm. broad.

STAMENS : 10, unequal, 1·8-3 cm. long ; filaments glabrous.

PISTIL : about 3 cm. long ; ovary green, 4 mm. long, densely glandular with red-headed short-stalked glands ; style glabrous or sparsely glandular at the base and elsewhere glabrous, yellowish-green and hardly widening below the small discoid stigma.

CAPSULE :

HABITAT : Western Yunnan ; Shweli—Salween Divide. Open rocky slopes at 10,000 ft. altitude.

This charming plant is now well known in cultivation. In habit and foliage it resembles *R. campylocarpum*. Its characteristic corolla-shape separates it readily from the rose-red members of either the Souliei or the Selense subseries.

RHODODENDRON CALOXANTHUM, *Balf. f. & Farrer* in *Notes R.B.G. Edin.*, vol. 13 (1922), 238.

ILLUSTRATION —

HABIT : a shrub of 3-5 ft. ; branches a year old about 3 mm. in diameter, glandular with short-stalked glands.

LEAVES : lamina leathery, broadly elliptic to more or less orbicular, 4-6·5 cm. long, 3-5 cm. broad ; apex rounded with a short thick mucro ; base truncate to more or less cordate ; upper surface dark green, glabrous at maturity, midrib slightly grooved, primary veins about 10 on each side slightly impressed ; under surface pale glaucous green, epidermis papillate and minutely punctulate with vestiges of glands and hairs, midrib raised ; petiole about 2 cm. long, clad with stalked glands which may extend to the base of the midrib and leaf margin.

INFLORESCENCE : a 4-6-flowered umbel ; rhachis very short.

PEDICELS : about 1·5 cm. long, densely glandular with stalked glands.

CALYX : fleshy, about 5 mm. long, densely glandular ; lobes 5, short, glandular.

COROLLA : campanulate, about 3 cm. long, citron or sulphur yellow when fully open, flushed and tipped orange-scarlet in bud ; lobes 5, about 8 mm. long, 2 cm. broad.

STAMENS : 10, unequal, 2-2·5 cm. long ; filaments glabrous.

PISTIL : 2·5-3 cm. long, about equalling the longest stamens ; ovary narrow conoid, about 4 mm. long, densely clad with stalked glands ; style clad with stalked glands over the lower third of length ; stigma small, lobulate.

CAPSULE : cylindric-oblong, 2·5 cm. long, 7 mm. broad, blackish, slightly curved, 5-7-chambered, calyx more or less persistent.

HABITAT : North-Eastern Upper Burma ; Chimili, Hpimaw and Chawchi Passes. Open slopes and precipice ledges and alpine scrub at 11,000-12,000 ft. altitude.

R. caloxanthum recalls in its foliar characters some of the smaller forms of *R. Wardii* but has a different corolla shape and a style glandular only below. In nature it is a small bush as compared with either *R. Wardii* or *R. campylocarpum*.

RHODODENDRON CAMPYLOCARPUM, *Hook. f.* (Copied from figure in *Hooker's Sikkim Rhododendrons*, t. 30.)

A. Flowering shoot. B. Fruit. C. Section of ovary. D. Pistil. E. Stamen. A and B about ⅔ natural size. C, D and E enlarged.

RHODODENDRON CAMPYLOCARPUM, *Hook. f.* in *Rhodo. Sikkim Himal.* (1851), 33.

Illustrations—Hook. f., *Rhodo. Sikkim Himal.* (1851), t. 30 ; *Bot. Mag.*, vol. 83 (1857), t. 4968.

Habit : a small rounded bush of 4-8 ft. ; vegetative shoots a year old about 3 mm. in diameter clad with stalked glands.

Leaves : lamina ovate to shortly elliptic, leathery, 5-8 cm. long, 3-5 cm. broad ; apex rounded to broadly obtuse ; base cordate to truncate or rarely rounded ; upper surface dark green, glossy, glabrous or flecked with vestiges of a white juvenile tomentum, midrib slightly grooved, pale green, primary veins about 10 on each side impressed ; under surface pale glaucous green, the epidermis waxy papillate and minutely punctulate with very small brown hairs, midrib raised, more or less glandular towards the petiole, primary veins slightly raised ; petiole 1·5-2 cm. long, grooved above, clad with scattered stalked glands and small hairs, the former extending to the margin of the leaf.

Inflorescence : a lax racemose umbel of 6-8 flowers.

Pedicels : 2-3 cm. long, more or less glandular with stalked glands or practically glabrous.

Calyx : about 5 mm. long, cuplike ; lobes 5, somewhat unequal, oval, rounded or angular, more or less glandular and gland-fringed.

Corolla : campanulate, 4 cm. long, pale or bright yellow with or without faint basal crimson blotching ; lobes 5, 1·5-2 cm. long, 2-2·5 cm. broad, rounded, undulate, emarginate.

Stamens : 10, unequal, 1·5-3 cm. long ; filaments glabrous or more or less puberulous at the base ; anthers reddish.

Pistil : about 4 cm. long ; ovary conoid, 5 mm. long, densely clad with short-stalked glands ; style glandular at the base or quite glabrous, curved and thickened towards the broadish lobulate stigma.

Capsule : cylindric, grooved, 2-2·5 cm. long, 4 mm. in diameter, curved in a semi-circular arc, more or less covered with stalked glands, 5-7-chambered.

Habitat : Eastern Nepal and Sikkim Himalaya. In rocky valleys and open spaces at 11,000-14,000 ft. altitude.

R. campylocarpum, the only Himalaya member of the subseries, has a more ovate leaf than its two yellow-flowered allies. It has long been in cultivation and appears to be variable in the degree of glandularness of pedicels, calyx and style, and in the presence or absence of a blotch at the base of the corolla.

RHODODENDRON CYCLIUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 39.

Illustration—

Habit : a shrub of 4-6 ft. ; branches below inflorescences about 3 mm. in diameter ; young shoots at first glandular.

Leaves : lamina orbicular or very shortly ovate, thinly leathery, 3-5 cm. long, 2-4·5 cm. broad : apex rounded ; base cordate to truncate ; upper surface dark green, glabrous ; under surface paler, glaucous, minutely punctulate, midrib raised, glandular towards the base, primary veins about 9 on each side slightly raised ; petiole 1-2 cm. long, glandular with stalked glands which extend to the margin of the lamina base.

Inflorescence : an umbel of about 5-8 flowers.

Pedicels : 1-2 cm. long, densely glandular.

Calyx : small, 3 mm. long, with 5 small rounded or pointed very glandular lobes.

Corolla : campanulate, about 3 cm. long, deep rose with a darker basal blotch ; lobes 5, about 1 cm. long, 1·5 cm. broad.

Stamens : 10, unequal, 1·5-2·5 cm. long ; filaments glabrous.

Pistil : nearly equalling corolla about 3 cm. long ; ovary conoid, about 5 mm. long, densely glandular ; style glabrous or with a few glands at base.

Capsule : cylindric, more or less curved, about 2 cm. long, 5 mm. broad.

Habitat : Western Yunnan ; N'Maikha Salween Divide. Rocky slopes and cane brakes and open thickets at 10,000-11,000 ft. altitude.

R. cyclium is very near to *R. callimorphum* but has a more orbicular leaf with a thicker and more leathery texture. The corolla is of a deeper tint.

RHODODENDRON HEDYTHAMNUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1922), 261.

ILLUSTRATION—

HABIT : a shrub of 4-5 ft. ; shoots a year old about 3 mm. in diameter clad with vestiges of glands.

LEAVES : lamina elliptic to rounded, 3·5-5·5 cm. long, 3-4 cm. broad ; apex rounded to broadly obtuse ; base rounded or cordate ; upper surface dark green, midrib grooved with vestiges of glands and hairs in the groove, primary veins 12 on each side slightly impressed ; under surface glaucous-grey, papillate, minutely punctulate with vestiges of minute glands and hairs, midrib slightly raised, primary veins faintly visible ; petiole 1·5-2 cm. long, at first clad with setulose hairs and glands, later glabrescent with vestiges of glands.

INFLORESCENCE : an umbel of about 6 flowers.

PEDICELS : about 1 cm. long, clad with shortly-stalked glands.

CALYX : about 5 mm. long ; lobes 5, oval to oblong, obtuse or rounded at tip, sparse glandular on the back and gland-fringed.

COROLLA : openly funnel-campanulate, about 4 cm. long, pale rose without spots ; lobes 5, broadly rounded, emarginate.

STAMENS : 10, 1·3-2·3 cm. long ; filaments puberulous.

PISTIL : 3 cm. long ; ovary narrow conoid, densely clad with short-stalked glands ; style glabrous.

CAPSULE :

HABITAT : Western Yunnan ; Tali Range. Rocky open slopes at 11,000 ft. altitude.

A pale rose-flowered species of the subseries from the Tali Range. In many features akin to the western N'Maikha—Salween species *R. myiagrum*, but distinguished by its large unspotted flowers.

RHODODENDRON MYIAGRUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 52.

Illustration—

Habit : a shrub of 3-5 ft. ; branches thin, those below inflorescences about 3 mm. in diameter ; young shoots at first glandular, old twigs glabrescent, greyish-white.

Leaves : lamina orbicular, 2-6·5 cm. long, 1·5-4 cm. broad ; apex mucronulate ; base cordulate, sometimes truncate ; upper surface dark green, at maturity glabrous, midrib slightly grooved, primary veins 7-10 on each side impressed ; under surface glaucous papillate, minutely punctulate, midrib raised, more or less glandular towards the base, primary veins conspicuous but not elevated ; petiole about 1·5 cm. long, at first more or less glandular, later glabrescent.

Inflorescence : an umbel of 4-5 flowers.

Pedicels : stout, about 1·5 cm. long, densely clad with very sticky short-stalked glands.

Calyx : 5-6 mm. long, cup glandular ; lobes 5, fleshy, oblong-obtuse, about 3·5 mm. long, densely glandular on back and fringed with glands.

Corolla : campanulate, about 2·5 cm. long, white with a few spots and a faint basal blotch ; lobes 5, rounded, 1 cm. long, 1·5 cm. broad.

Stamens : 10, unequal, 1·5-2·5 cm. long ; filaments glabrous.

Pistil : about 2·5 cm. long, about equalling corolla ; ovary conoid, 4 mm. long, densely glandular with short-stalked glands ; style glabrous or with a few glands at the base.

Capsule :

Habitat : Western Yunnan ; N'Maikha—Salween Divide. In open cane brakes and thickets at 10,000 ft. altitude.

This has the appearance of a white *R. cyclium* with smaller flowers and with such glandular pedicels that in Yunnan they are often found plastered with small flies—a fact referred to in the choice of the specific name.

RHODODENDRON TELOPEUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 61.

ILLUSTRATION—

HABIT : a shrub of 3 ft. ; branches thin ; young shoots sparsely clad with short glands.

LEAVES : lamina leathery, shortly elliptic or semi-orbicular, 2·5-5 cm. long, 1·7-3 cm. broad ; apex rounded, mucronulate ; base rounded to cordulate ; upper surface glabrous at maturity, midrib slightly grooved, primary veins about 7 on each side slightly impressed ; under surface glaucous, papillate and punctulate with minute dots the bases of withered hairs or glands ; petiole about 1 cm. long, with vestiges of glands.

INFLORESCENCE : a lax umbel of about 4 flowers.

PEDICELS : 1·5-2·5 cm. long, glandular, glands subsessile.

CALYX : small, a few mm. long, glandular, the lobes very short and gland-fringed.

COROLLA : openly campanulate, 3·5-4 cm. long, bright yellow with a faint basal crimson blotch ; lobes 5, broad, emarginate.

STAMENS : 10, unequal, 2-3 cm. long, shorter than corolla ; filaments puberulous.

PISTIL : about 3·5 cm. long, almost equalling corolla ; ovary conoid, about 5 mm. long, the ridges glandular ; style glabrous throughout.

CAPSULE : about 1·5-2 cm. long, 6-7 mm. broad, slightly curved.

HABITAT : South-Eastern Tibet ; Salween -- Kiu chiang Divide. Margins of thickets and in scrub at 12,000 ft. altitude.

R. telopeum is akin to *R. caloxanthum*, from which it differs in the smaller foliage and glabrous style. There is a form of it known as *telopeoides*, where the leaf tends to lose its orbicular shape and becomes more ovate and more pointed and the style is much exserted and commonly somewhat glandular at the base. From *R. caloxanthum*, *R. telopeum* and its form *telopeoides* differs in the puberulous stamens.

THOMSONII SERIES

SUBSERIES MARTINIANUM

R. Martinianum is undoubtedly of the Thomsonii alliance but is not referable to any of the four main subseries. Its nearest kinship is with the subseries Thomsonii, for *R. Stewartianum* appears to be connected with it by somewhat intermediate forms. It may be regarded as having the foliage of some of the smaller-leaved expressions of *R. Stewartianum* with flowers in shape and structure similar to those of the Selense subseries. Markedly glandular like many of its allies in its flower parts, it has also sessile glands on the under side of the leaf. In the typical species the lamina is thin in texture but with a marked rigidity; the flower is long pedicelled and pendant, often solitary, with a funnel-shaped corolla; but in *R. eurysiphon* and associated forms the corolla takes on rather the flower characters of *R. Stewartianum*; a fleshy texture, a broader-based tube, and a shorter pedicel. It has also marked spotting on the corolla—not seen in *R. Martinianum* itself but occurring not infrequently in the Thomsonii subseries.

R. Martinianum has much slenderer flowering shoots than are found among the members of the subseries Thomsonii, and these shoots in the wild plant at least are conspicuous by their peculiar nodulose swellings.

KEY TO THE SPECIES

Flower more or less unspotted, funnel-shaped; with base narrow; pedicels 2·5-3 cm. long . . . . . **Martinianum.**
Flower spotted, campanulate; with base broad; pedicels 1·2 cm. long . . . . . **eurysiphon.**

RHODODENDRON EURYSIPHON, *Tagg & Forrest, sp. nov.*

ILLUSTRATION—

HABIT : a shrub of 3-5 ft. with somewhat rigid foliage ; shoots below inflorescences, 2-3 mm. in diameter, glandular with short-stalked glands, older wood ash-grey, glabrescent.

LEAVES : lamina oblong-elliptic, thinly leathery, 3-5·5 cm. long, 1·2-2·5 cm. broad ; apex rounded, apiculate ; margin somewhat recurved ; base broadly obtuse or rounded ; upper surface smooth, at maturity glabrous, midrib grooved, primary veins not conspicuous ; under surface pale glaucous, papillate and minutely punctulate all over with minute glands or vestiges of glands ; petiole about 5 mm. long, grooved above, more or less glandular.

INFLORESCENCE : an open umbel of 3-5 flowers ; rhachis about 5 mm. long, tomentose.

PEDICELS : slender, 1-2 cm. long, clad with stalked glands.

CALYX : small but cup-like, about 4 mm. long, with an undulate rim of 5 broadly rounded lobes, glandular on the back and gland-fringed at the margin.

COROLLA : broadly campanulate, creamy white or very pale rose, more or less heavily flushed deep magenta, copiously spotted crimson, 3·5-4 cm. long ; lobes 5, 1·5 cm. long, 2 cm. broad, deeply notched.

STAMENS : 10, unequal, 1·3-3 cm. long ; filaments stout, puberulous at base.

PISTIL : 3·5 cm. long ; ovary ovoid, grooved, 5 mm. long, densely glandular ; style glabrous.

CAPSULE : oblong, about 1·5 cm. long, 5 mm. broad, blackish, slightly curved, clad with withered glands, calyx persistent.

HABITAT : South-Eastern Tibet ; Tsarong, Salween—Kiu chiang Divide. In scrub, rhododendron thickets, and on stony slopes at 13,000 ft. altitude.

R. eurysiphon forms a link between *R. Martinianum* and the subseries Thomsonii. In contrast to *R. Martinianum* it has a campanulate flower with a broader base.

RHODODENDRON MARTINIANUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 96.

Illustration—

Habit : a shrub of 3-6 ft. with stiff branches, those a year old about 1·5 mm. in diameter, densely glandular with long setose glands and glands on shorter stalks, older wood grey-white and nodular.

Leaves : lamina thinly leathery but rigid, elliptic or elliptic-oblong, 2·5 cm. long, 1-2·5 cm. broad ; apex rounded, apiculate ; margin recurved, somewhat undulate glandular on young leaf ; base broadly obtuse or rounded ; upper surface smooth at first clad with stalked glands and hair flocks, later almost glabrous but studded with bases of fallen glands, midrib grooved and at base lined by glands, primary veins not conspicuous ; under surface paler glaucous, papillate and punctulate all over with glands or vestiges of glands, midrib elevated, primary veins and vein reticulations slightly raised ; petiole grooved, 5-7 mm. long, more or less glandular with stalked glands and smaller short-stalked glands.

Inflorescence : a terminal umbel of 2-3 flowers.

Pedicels : slender, 2·5-3·5 cm. long, glaucous, more or less clad with stalked glands and occasional floccose hairs.

Calyx : small, about 2·5 mm. long, cup fleshy ; lobes broadly triangular, semi-lunate or rounded, fringed with stalked glands.

Corolla : funnel-campanulate, base narrow, pale rose, 2·5-3·5 cm. long ; lobes 5, about 1·5 cm. long, 2 cm. broad, rounded, emarginate.

Stamens : 10, unequal, 1·7-3·2 cm. long ; filaments at base puberulous.

Pistil : 3-3·5 cm. long, slightly shorter than corolla ; ovary 4 mm. long, conoid, narrowed into style, grooved, densely clad with stalked glands ; style glandular at base.

Capsule : curved to sickle-shaped, about 2·5 cm. long, 6 mm. in diameter, pale brown, 5-6-chambered.

Habitat : South-Eastern Tibet and North-Western Yunnan ; Mekong—Salween and Salween—Kiu chiang Divides. Open rocky pastures, thickets, and in scrub at 11,000-12,000 ft. altitude.

The special points of *R. Martinianum* are discussed in the introduction to the subseries to which it gives its name.

THOMSONII SERIES

SUBSERIES SELENSE

Of the subseries which constitute the large aggregation known as the Thomsonii series, the subseries Selense is the one which deviates most from the general idea of the plant which gives its name to the series. The most prominent indications of divergence from the Thomsonii centre are :—

1. The flowering shoots are comparatively slender.
2. The foliage tends to be narrower, less rounded at apex and base, and thinner in texture.
3. The calyx is usually small, but shows similarity to that of several members of the Souliei and Campylocarpum subseries.
4. The corolla is narrowed at the base, giving a funnel-shaped form ; it is much less fleshy in texture, and that condition is correlated with a prevalence of white or rose colours.

While these points hold true for the typical members of this subseries, still wider divergences must be noted in certain aberrant species included here. *R. dasycladum* and its immediate allies show a marked development of bristly-glandular shoots and petioles—not otherwise found in Selense. At first sight this hirsuteness suggests a link between these and the Barbatum series, but their true affinity is undoubtedly with Selense. Further, *R. setiferum* and its associates have coriaceous leaves still less suggestive of Selense and at the same time indications of indumentum—again a divergence from the Thomsonii characters. Except in the doubtful case of *R. esetulosum*, the flowers of these aberrant species favour the Selense type but tend to have a rather broader base to the corolla. It is evident that *R. setiferum* and its kindred have much in common with *R. dasycladum* and *R. rhaibocarpum*, the affinity of which to Selense is not in question. They, however, suggest a certain relationship with members of the Adenogynum subseries (series Taliense) but lack the characteristic indumentum.

Among the typical species of the subseries, *R. selense* and *R. erythrocalyx* form two centres round which may be grouped about a dozen allies treated as subspecies which differ in minor points from the two mentioned.

THOMSONII SERIES

SUBSERIES SELENSE

KEY TO THE SPECIES

A. Leaves thin, chartaceous in texture, as in *R. selense* :
  B. Petioles, young shoots and pedicels not bristly-glandular ; where glands are present they are subsessile :
    C. Flowers white to rose :
      D. Leaves more or less cuneate at base, not cordate.
        Calyx small, 2-3 mm. long, lobes obscure . **selense.**
        Subspecies of *R. selense* . **axium.** **metrium.** **chalarocladum.** **nanothamnum.** **dolerum.** **pagophilum.** **duseimatum.** **probum.**
      DD. Leaves more or less cordate at base.
        Calyx large, 5-7 mm. long, lobes distinct **erythrocalyx.**
        Subspecies of *R. erythrocalyx* **beimaense.** **eucallum.** **docimum.** **truncatulum.**
    CC. Flowers yellow . . . . . **cymbomorphum.**
  BB. Petioles, young shoots and pedicels densely bristly-glandular :
    C. Indumentum not evident to the eye, a thin veil :
      D. Leaves elliptic to oval, 3-7 cm. long, 1·5-3 cm. broad **rhaibocarpum.**
      DD. Leaves oblong, 5-8 cm. long, 2·8-3·8 cm. broad **dasycladum.**
    CC. Indumentum evident, scurfy . . . **vestitum.**
AA. Leaves thick, coriaceous in texture, as in *R. taliense* :
  B. Petioles, young shoots and pedicels clad with short-stalked or subsessile glands and sometimes also with floccose hairs :
    C. Calyx small, 1-4 mm. long, lobes fleshy, rounded.
      Style glabrous or sparsely glandular at base only :
      D. Ovary clad with branched hairs and stalked glands ; indumentum of leaf under surface patchy rufescent hair tufts, detersile . . . . **calvescens.**
      DD. Ovary clad with sessile glands only ; indumentum of leaf under surface a thin obscure veil **manopeplum.**
    CC. Calyx large, 1 cm. long, style glandular $\frac{2}{3}$-$\frac{3}{4}$ of its length **esetulosum.**
  BB. Petioles, young shoots and pedicels bristly-glandular :
    C. Leaf below with glaucous bloom ; indumentum none **jucundum.**
    CC. Leaf below not glaucous ; indumentum of minute hairs and minute glands . . . . . **setiferum.**

RHODODENDRON CALVESCENS, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 29.

Illustration—

Habit : a shrub of 3-6 ft. ; branches of the year clad with a tomentum of floccose hairs and shortly-stalked glands.

Leaves : petiolate ; lamina oblong, 6-10 cm. long, 2·5-3·5 cm. broad ; apex obtuse ; base trunculate or cordulate, occasionally rounded ; upper surface mat, glabrous or with traces of juvenile hairs, midrib grooved, primary veins about 12 on each side hardly visible ; under surface pale, clad with a thin rufescent detersile indumentum of semi-agglutinate hairs and small sessile glands, midrib prominent, clad with a few short glands, primary veins slightly raised ; petiole about 1 cm. long, stout, glabrescent with traces of floccose hairs and glands.

Inflorescence : a short racemose umbel of about 8 flowers ; rhachis floccose, about 5 mm. long.

Pedicels : about 1·3 cm. long, sparsely clad with glands and floccose greasy hairs.

Calyx : small, cupular, about 3 mm. long ; lobes 5, fleshy, rounded, glandular with short-stalked glands, gland-fringed.

Corolla : campanulate, about 3·5 cm. long, rose without blotch or spots ; lobes 5, rounded, about 1·8 cm. long, 1·8 cm. broad, emarginate.

Stamens : 10, unequal, 1·2-2·5 cm. long ; filaments puberulous at base.

Pistil : about 3·5 cm. long ; ovary conoid, truncate, about 5 mm. long, grooved, clad with branched hairs and short-stalked glands ; style stout, glabrous.

Capsule : oblique to pedicel, slightly curved, about 2 cm. long, 5 mm. broad, black or dark brown, rough.

Habitat : South-EasternTibet ; Doker-La, Mekong—Salween Divide. In open thickets.

R. calvescens is one of the aberrant members of the subseries Selense in its coarser shoots and leaves with traces of a scurfy indumentum. Its flower is that of Selense, but its ovary is more hairy than glandular—a condition not found normally throughout Thomsonii. Its nearest ally is *R. manopeplum*.

RHODODENDRON CYMBOMORPHUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 12 (1920), 102.

ILLUSTRATION—

HABIT : a shrub of 6-8 ft. ; branches slender, straight, when a year old about 3 mm. in diameter, at first glandular, later glabrescent.

LEAVES : petiolate ; lamina thinly leathery, oblong-oval or oblong, 5·5-10 cm. long, 3-4 cm. broad ; apex broadly obtuse, apiculate ; base truncate or cordulate ; upper surface olive-green, mat, glabrous, midrib grooved, primary veins 12-15 on each side impressed ; under surface pale grey-green, clad with a thin veil of minute hairs, midrib raised, glabrous, primary veins and vein reticulations showing faintly ; petiole 2-3 cm. long, grooved above, sparsely glandular.

INFLORESCENCE : a shortly racemose umbel of 4-7 flowers.

PEDICELS : 2·5-3 cm. long, expanded below the calyx, glandular.

CALYX : conspicuous, about 5 mm. long, glandular outside ; lobes 5, oblong-rounded, 3 mm. long, glandular and gland-fringed.

COROLLA : funnel-campanulate, yellow without markings, about 4 cm. long ; lobes 5, about 1·5 cm. long, 2·5 cm. broad, emarginate.

STAMENS : 10, unequal, 1·5-2·5 cm. long ; filaments puberulous.

PISTIL : about 3·5 cm. long ; ovary conoid, grooved, truncate, 4-5 mm. long, densely glandular ; style glandular for half its length ; stigma lobulate.

CAPSULE :

HABITAT : North-Western Yunnan ; Bei-ma-Shan. In shady pine forests and amongst scrub at 11,000-12,000 ft. altitude.

R. cymbomorphum is exceptional in the series in its light-yellow flowers. It occurs in the same area as *R. erythrocalyx* and is undoubtedly akin to that species. In spite of its colour it is not readily connected with the yellow members of either the Souliei or the Campylocarpum subseries.

RHODODENDRON DASYCLADUM, *Balf. f. & W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 10 (1917), 98.

Illustration—

Habit : a shrub of 6-10 ft., with thin straight branches which in the first year are clad with long-stalked glands and fewer floccose hairs, later the shoots become glabrescent.

Leaves : lamina thinly leathery, oblong, sometimes oblong-elliptic, 5-8 cm. long, 2·8-3·8 cm. broad ; apex obtuse, tapered from the upper third ; base truncate or cordulate ; upper surface mat, dark green, glabrous, midrib slightly grooved, primary veins about 13 on each side impressed ; under surface pale green, epidermis punctulate with small glands and very thinly veiled by minute hairs, midrib raised, glabrous or somewhat glandular and floccose, primary veins and vein reticulations not conspicuous; petiole about 2 cm. long, slightly grooved above, at first setose-glandular and floccose, later glabrescent.

Inflorescence : an umbel of 5-8 flowers.

Pedicels : about 1·7 cm. long, densely glandular with long and short-stalked glands.

Calyx : small, about 1·5 mm. long, with 5 short lobes densely glandular.

Corolla : funnel-campanulate, 3 cm. long, rose (?) ; lobes 5, broadly rounded, 1 cm. long, 1·5 cm. broad.

Stamens : 10, unequal, 2-3 cm. long ; filaments pubescent in the lower part.

Pistil : about 3·7 cm. long ; ovary thin, 7 mm. long, densely glandular, glands shortly stalked ; style more or less glandular at the base.

Capsule :

Habitat : North-Western Yunnan ; mountains in the north-east of the Yangtze bend. In open thickets at 12,000 ft. altitude.

R. dasycladum, as the name suggests, marks a divergence from the members of the Selense subseries as well as from the general Thomsonii series in the more copious development of bristle-like glands on shoots and petioles. It has more elongated leaves than its ally *R. rhaibocarpum*.

RHODODENDRON ERYTHROCALYX, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 12 (1920), 110.

ILLUSTRATION—

HABIT : a twiggy shrub of 6-8 ft. ; branches straight, at first glandular, later glabrescent ; those a year old about 3 mm. in diameter.

LEAVES : lamina thinly leathery, oval or oblong-oval to ovate, 7-10 cm. long, 3·5-5 cm. broad ; apex rounded or obtuse with a beaked tip ; base cordulate ; upper surface olive-green, mat, to the eye glabrous but with vestiges of juvenile glands and hairs, midrib grooved, primary veins about 14 on each side slightly grooved ; under surface pale, clad all over with a veil of minute hairs, midrib raised clad with a few glands and hairs or glabrescent, primary veins and vein reticulations showing faintly ; petiole 2-2·5 cm. long, at first glandular with stalked glands, later glabrescent.

INFLORESCENCE : a terminal umbel of 4-6-flowers.

PEDICELS : 2-2·5 cm. long, glandular.

CALYX : reddish, about 7 mm. long, base fleshy, densely glandular ; lobes 5, elongate, triangular or obtuse, about 5 mm. long, rounded at top, glandular and hairy on margin.

COROLLA : funnel-campanulate, creamy white with a pale crimson basal blotch and some small crimson spots, about 4·5 cm. long ; lobes 5, rounded, 2·5 cm. broad, emarginate.

STAMENS : 10, unequal, 2-3·5 cm. long ; filaments glabrous or very slightly puberulous.

PISTIL : equalling or a little shorter than corolla, 4 cm. long ; ovary cylindric-conoid truncate, densely glandular, 5 mm. long ; style glabrous or with very few glands at the base, slightly expanding below the lobulate stigma.

CAPSULE :

HABITAT : North-Western Yunnan ; Bei-ma-Shan. Open thickets and pine forests at 13,000 ft. altitude.

R. erythrocalyx has larger leaves, larger flowers and more pronounced calyx than *R. selense*. It occupies with its associates the neighbouring divide—that of the Mekong—Yangtze in the same latitude.

SUBSPECIES OF RHODODENDRON ERYTHROCALYX

R. beimaense, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 32.

A subspecies of *R. erythrocalyx* with somewhat smaller calyx and corolla. Flowers white-flushed rose, not creamy white.

R. docimum, *Balf. f.* in *MS.*

A subspecies with smaller, broader, more elliptic leaves (averaging 6 cm. long, 4 cm. broad) and smaller flowers (3 cm. long), white-flushed rose with a crimson blotch at the base.

R. eucallum, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 43.

A subspecies with blunt leaves differing from the typical *R. erythrocalyx* in the more glandular style and with somewhat smaller flowers, white without markings.

R. truncatulum, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 63.

A subspecies closely akin to the subspecies *R. docimum,* with which it agrees in the short oval or elliptic leaves, broadly rounded or at times almost truncate at the apex. The flowers are smaller than those of typical *R. erythrocalyx,* and are creamy-white flushed rose or pale rose with a few crimson markings. The style is densely glandular at the base.

RHODODENDRON ESETULOSUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 42.

Illustration—

Habit : a shrub of 4-6 ft. ; branches stout, those below inflorescences about 5 mm. in diameter ; young shoots densely glandular with short-stalked glands, not setose.

Leaves : lamina thick, leathery, oblong, oval-oblong or ovate, 5-9 cm. long, 2·5-4 cm. broad; apex broadly acuminate, apiculate ; base rounded to truncate ; upper surface shagreen, minutely rugulose, glabrous at maturity, midrib grooved, primary veins about 12 on each side slightly impressed ; under surface pale, clad with a thin indumentum, midrib prominent, more or less glandular, lateral veins not conspicuous ; petiole 1-2 cm. long, at first glandular and floccose, later glabrescent, distinctly grooved.

Inflorescence : a lax umbel of 8-10 flowers ; rhachis about 5 mm. long, densely glandular.

Pedicels : about 2 cm. long, slender, glandular with short-stalked glands.

Calyx : as much as 1 cm. long, split to near the base into 5 unequal ovate rounded lobes, glandular on the back and fringed with short-stalked glands.

Corolla : broadly funnel-campanulate, 4 cm. long, creamy white-flushed rose, copiously crimson spotted on the posterior side ; lobes 5, unequal, 1·5-2 cm. long, 2-2·5 cm. broad, crenulate, emarginate.

Stamens : 10, unequal, 2-3 cm. long ; filaments puberulous at base.

Pistil : about 3 cm. long ; ovary densely glandular with short-stalked glands ; style glandular for about three-fourths its length.

Capsule :

Habitat : Yunnan ; north-east of the Chungtien. On bouldery slopes at 13,000-14,000 ft. altitude.

R. esetulosum resembles its ally *R. setiferum* in its foliage but has a larger, fleshier, more spotted corolla. In the characters of its calyx, corolla and glandular style it suggests kinship with certain members of the Adenogynum subseries but lacks the woolly felt prominent in that subseries.

RHODODENDRON JUCUNDUM, *Balf. f. & W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 9 (1916), 242.

(R. BLANDULUM, *Balf. f. & W. W. Sm.*)

ILLUSTRATION—

HABIT : a shrub or tree of 6-20 ft. ; young shoots covered with stalked setose glands ; year-old branches 3 mm. in diameter, more or less warty with vestiges of glands.

LEAVES : lamina elliptic, elliptic-oblong, 5-7 cm. long, 2·5-3·5 cm. broad ; apex broadly obtuse, apiculate ; base rounded to cordulate ; upper surface dark green, glabrescent, midrib and primary veins, the latter about 13 on each side, impressed ; under surface glaucous with waxy papillae punctulate with minute vestiges of glands and hairs but to the eye glabrous at maturity, midrib elevated, sparsely glandular towards the base, primary veins and vein reticulations hardly raised ; petiole about 1·5 cm. long, clad with long-stalked setose glands.

INFLORESCENCE : an umbel of 5-7 flowers.

PEDICELS : about 2 cm. long, clad with long-stalked glands.

CALYX : the basal cup about 1 mm. long, densely glandular ; lobes unequal, oblong, obtuse or rounded, about 2-5 mm. long, gland-fringed with almost sessile glands.

COROLLA : funnel-campanulate, rose or pale rose or almost white, 3·5 cm. long ; lobes 5, rounded, emarginate, 1·2 cm. long, 2 cm. broad.

STAMENS : 10, unequal, the longest slightly exceeding corolla tube, 1·5-2·5 cm. long ; filaments pubescent at base.

PISTIL : 3·5 cm. long ; ovary oblong, densely clad with stalked glands ; style glabrous.

CAPSULE :

HABITAT : Mid-Western Yunnan ; eastern flank of the Tali Range. Open rocky situations, mountain meadows and margins of pine forests, at 10,000-12,000 ft. altitude.

R. jucundum and its nearest ally, *R. setiferum*, are two of several aberrant members of the subseries with coarser foliage suggesting a link with some of the members of the Taliense series. The flowers are larger and more fleshy than those of typical Selense. *R. blandulum* is a form of this species with still larger flowers.

RHODODENDRON MANOPEPLUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1922), 275.

Illustration—

Habit : a shrub of a few feet ; branches a year old sparsely glandular with short-stalked glands, later glabrous, shoots below inflorescences about 6 mm. in diameter.

Leaves : lamina leathery, oblong-oval to ovate, 5-9 cm. long, 3-4·5 cm. broad ; apex very broadly obtuse ; base rounded to cordulate ; upper surface glabrous at maturity or with vestiges of glands and hairs, midrib grooved, primary veins about 14 on each side ; under surface pale green with a thin yellowish indumentum of small sebaceous hairs, midrib raised, more or less glandular, primary veins slightly raised ; petiole 1-1·5 cm. long, glandular, but not setose glandular.

Inflorescence : a racemose umbel of about 8 flowers.

Pedicels : about 1-1·5 cm. long, sparsely glandular, glands short-stalked.

Calyx : small, about 4 mm. long, with 5 rounded lobes, glandular and fringed with subsessile glands.

Corolla : widely campanulate, 4 cm. long, creamy-white flushed rose, faintly spotted ; lobes 5, rounded, emarginate, 1·5 cm. long, 2·2 cm. broad.

Stamens : 10, unequal, 1·3-2·3 cm. long ; filaments puberulous.

Pistil : about 3 cm. long ; ovary 5 mm. long, clad with almost sessile glands ; style glandular at base.

Capsule :

Habitat : South-Eastern Tibet, Tsarong.

R. manopeplum has the thick shoots and coarse foliage of *R. setiferum* and *R. esetulosum*, from both of which it differs in its very small calyx.

RHODODENDRON RHAIBOCARPUM, *Balf. f. & W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 10 (1917), 142.

Illustration—

Habit : a shrub of 4-7 ft., branches thin, straight, those a year old about 2 mm. diameter, densely setose-glandular, sparingly floccose, older twigs glabrous.

Leaves : lamina thinly leathery or chartaceous, elliptic to oval, 3-7 cm. long, 1·5-3·5 cm. broad ; apex obtuse, apiculate ; base subtruncate, hardly cordulate ; upper surface mat green, glabrous or with traces of juvenile hair flocks, midrib grooved, primary veins 9-12 on each side slightly impressed ; under surface pale green, thinly veiled with minute hairs, midrib prominent, more or less glandular, primary veins hardly prominent ; petiole about 1·5 cm. long, at first setose-glandular and floccose, later glabrescent.

Inflorescence : an umbel of about 8 flowers.

Pedicels : 1·5 cm. long, clad with stalked glands.

Calyx : small, 1-2 mm. long, densely glandular ; lobes unequal, the longer rounded about 2 mm. across, gland-fringed.

Corolla : funnel-shaped, 3-3·5 cm. long, white occasionally flushed rose with a small blotch of crimson at base ; lobes 5, about 1·2 cm. long, 2 cm. broad, emarginate.

Stamens : 10, unequal, 1·5-3 cm. long ; filaments puberulous at base.

Pistil : 3-3·5 cm. long ; ovary narrow tapered upwards, 5 mm. long, densely clad with stalked glands ; style glabrous.

Capsule : narrow, sickle-shaped, purplish-black, about 2·5 cm. long, 4 mm. diameter.

Habitat : North-Western Yunnan ; Kari Pass, Mekong—Yangtze Divide. In shady situations in margins of pine and rhododendron forests, at 11,000-12,000 ft. altitude.

R. rhaibocarpum is not far removed from *R. dasycladum* but its leaves are broader in proportion to their length. It is consequently rather nearer to the typical species of the subseries, but like its ally has setose-glandular shoots and petioles.

RHODODENDRON SELENSE, *Franch* in *Journ. de Bot.*, vol. 12 (1898), 257.

(R. PANTEUMORPHUM, *Balf. f. & W. W. Sm.*)

ILLUSTRATION—

HABIT : a small shrub of 4-6 ft. ; branches below inflorescences about 3 mm. in diameter ; young shoots clad at first with short-stalked glands and hair flocks which disappear on older branches.

LEAVES : lamina thinly leathery, oblong, oblong-oval or obovate, 3-5 cm. long, 1·5-3 cm. broad ; apex obtuse or somewhat rounded ; base broadly obtuse to rounded but never cordulate ; upper surface dark green, glabrous at maturity or with some vestiges of juvenile hairs, midrib grooved, primary veins about 12 on each side impressed ; under surface pale, midrib raised, glabrescent with vestiges of glands, primary veins and vein reticulations showing through a thin indumental veil of minute hairs which may wear off on old leaves ; petiole 2 cm. long, at first glandular and floccose, ultimately more or less glabrescent.

INFLORESCENCE : an umbel of 4-5 flowers.

PEDICELS : about 1·5 cm. long, clad with short-stalked glands and fewer floccose hairs.

CALYX : about 3 mm. long, densely glandular ; lobes 5, obtuse or acute, fringed with glands and hairs.

COROLLA : funnel-campanulate, about 3 cm. long, white flushed rose or rose coloured, in the type without spots or blotch ; lobes 5, rounded, undulate, about 1·2 cm. long, 1·8 cm. broad.

STAMENS : 10, unequal, about 1·5-2·5 cm. long ; filaments puberulous at the base.

PISTIL : about 3 cm. long, about equal to corolla or slightly shorter ; ovary cylindric, truncate, 5 mm. long, clad with short-stalked glands and a few floccose hairs ; style glabrous.

CAPSULE : narrow, cylindric, curved, about 1·5 cm. long, 4 mm. in diameter, blackish and clad with vestiges of glands.

HABITAT : Western Yunnan ; Sila. On the summit of hills between the Mekong and the Salween, at 10,000-12,000 ft. altitude.

Typical *R. selense* and the closely associated subspecies are found only in the Mekong—Salween area. *R. dolerum* is an exception found to the east of the locality of the type, in south-western Szechuan in the neighbourhood of Muli.

SUBSPECIES OF RHODODENDRON SELENSE

R. axium, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 30.

A subspecies with somewhat larger leaves and larger flowers, the latter distinctly blotched and spotted. The style has a few glands at the base.

R. chalarocladum, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1922), 240.

A sparingly glandular subspecies with oblong leaves.

R. dolerum, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 40.

This is an outlier of *R. selense* from south-western Szechuan. It has similar foliage, but the flower is larger than that of typical *R. selense* with a broader base to the corolla.

R. duseimatum, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 41.

Differs from typical *R. selense* in its longer oblong-lanceolate leaves, larger flower trusses and relatively long pedicels. It is a less glandular plant than the type with the glands of the ovary and calyx more or less replaced by short-branched hairs. The flower is rose with a crimson blotch at base.

R. metrium, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 52.

A subspecies with white flowers without markings.

R. nanothamnum, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 53.

This is closely akin to *R. probum*. The flowers are creamy-white faintly flushed pink with a small crimson blotch at base.

R. pagophilum, *Balf. f. & Ward* in *Notes R.B.G. Edin.*, vol. 9 (1916), 256.

A subspecies with small elliptic leaves and small flowers dark-rose to crimson.

R. probum, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1922), 288.

A subspecies with the leaf under surface glaucous grey and flowers white without markings.

RHODODENDRON SETIFERUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 11 (1919), 137.

ILLUSTRATION—

HABIT : a shrub of 5-9 ft. with straight branches ; those a year old about 3 mm. in diameter, clad more or less densely with glandular setae mixed with shorter glands and some floccose hairs ; shoots below inflorescences about 7 mm. in diameter.

LEAVES : lamina leathery, oblong, 5-9 cm. long, 2-3·5 cm. broad ; apex narrowed to an obtuse beak ; base trunculate or rounded ; upper surface glabrescent with vestiges of juvenile floccose hairs, midrib grooved with vestiges of juvenile floccose hairs, primary veins about 14 on each side impressed ; under surface clad with a thin indumentum of loose flock-like hairs and short-stalked glands, midrib raised, more glandular than floccose, primary veins hardly raised ; petiole 1·5 cm. long, grooved, gland-setulose and floccose.

INFLORESCENCE : an umbel of about 10 flowers ; rhachis about 5 mm. long, floccose and glandular.

PEDICELS : about 2 cm. long, glandular with stalked ovoid glands and a few floccose hairs.

CALYX : about 1 cm. long, cup about 3 mm. long ; lobes 5, unequal, membranous, ligulate, glandular outside and fringed with glands and hairs.

COROLLA : funnel-shaped, creamy-white, lined crimson at base, about 3·5 cm. long ; lobes 5, rounded, 1·5 cm. long, 2 cm. broad, emarginate.

STAMENS : 10, unequal, 1·8-3 cm. long ; filaments puberulous for about half their length.

PISTIL : about 3·2 cm. long ; ovary about 4 mm. long, conoid, truncate, densely setulose-glandular ; style puberulous at base.

CAPSULE :

HABITAT : North-Western Yunnan ; Mekong—Salween Divide. In open thickets and pine forests at 12,000-13,000 ft. altitude.

Its nearest ally is *R. jucundum*, a species confined to the Tali Range, which is over 100 miles south-east from the Mekong—Salween Divide (the home of *R. setiferum*), but is nevertheless in the same water basin drainage system. *R. setiferum* has also affinity with *R. esetulosum*, which has, however, no bristles. There is a link also with some of the less bristly Barbatums.

RHODODENDRON VESTITUM, *Tagg & Forrest, sp. nov.*

Illustration—

Habit : a shrub of 4-5 ft. with twisted branches of short annual growth ; shoots at first bristly-glandular, later glabrescent ; branches below inflorescences about 3-4 mm. diameter.

Leaves : lamina oval to elliptic or at times obovate, 3·5-5 cm. long, 1·5-3 cm. broad ; apex very broadly obtuse or rounded, apiculate ; base broadly obtuse or somewhat rounded ; upper surface minutely rugulose, glabrous at maturity, midrib slightly grooved, primary veins 9-12 on each side very slightly impressed ; under surface clad with a tawny to brown detersile loose indumentum of branched hairs giving a patchy-scurfy surface, midrib raised, glandular, primary veins and vein reticulations more or less hidden ; petiole short, 5-7 mm. long, grooved above, setose-glandular, the glands extending to the base of the leaf margin.

Inflorescence : an umbel of about 6 flowers ; rhachis short, 3-5 mm. long, floccose and glandular.

Pedicels : 1·5 cm. long, clad with long-setose glands and shorter-stalked glands.

Calyx : small, about 1-2 mm. long, glandular ; lobes fleshy, rounded or triangular, gland-fringed.

Corolla : funnel-campanulate, 3-3·5 cm. long, white flushed rose, deep rose in bud, with a few crimson markings and a basal crimson blotch ; lobes 5, 1 cm. long, 1·3 cm. broad.

Stamens : 10, unequal, 1·5-3 cm. long ; filaments puberulous at base.

Pistil : about equalling corolla, 3-3·5 cm. long ; ovary conical, 4 mm. long, densely clad with long-stalked glands ; style glabrous or with a few glands at base.

Capsule : cylindric, slightly curved, 1-1·5 cm. long, 4 mm. broad, slightly grooved, rough with vestiges of glands.

Habitat : South-Eastern Tibet ; Salween—Kiu chiang Divide. In cane brakes at 14,000 ft. altitude.

A species closely akin to *R. dasycladum* and *R. rhaibocarpum*, from which species it differs in its smaller oval leaves with a distinct tawny leaf indumentum—an exceptional occurrence in the species included in the series Thomsonii.

THOMSONII SERIES

SUBSERIES SOULIEI

This subseries is one of the easiest to determine among the ramifications of the Thomsonii series. Two very definite characters are here linked together—the very open corolla and the entirely glandular style. *R. Williamsianum* alone deviates in the more campanulate corolla. Associated with these outstanding features are also the prevalence of yellow flowers of fleshy texture, and the general glandularness of foliar and floral parts. There are two centres, *R. Souliei* and *R. Wardii*, which are geographically wide apart. With the exception of the imperfectly known *R. Bonvalotii* and the somewhat aberrant *R. Williamsianum*, allies of *R. Souliei* are as yet unknown from its Szechuan habitat. There is, however, a remarkable development of *R. Wardii* and its allies in the Yunnan area. The subseries is of special interest in presenting, by reason of corolla shape and corolla colour, quite a new note to the rhododendrons of cultivation.

KEY TO THE SPECIES

A. Flowers white to rose :
  B. Leaf base cordate to rounded :
    C. Leaves orbicular, average diameter 2·5 cm. **Williamsianum.**
    CC. Leaves ovate to orbicular.
      Average length to breadth, 6 to 4 cm.
      Flowers bowl-shaped, rose-pink to white . **Souliei.**
    CCC. Leaves oblong.
      Average length to breadth, 8 to 4 cm.
      Flowers bowl-shaped, pure white . . **puralbum.**
  BB. Leaf base tapered . . . . . **Bonvalotii.**
AA. Flowers yellow :
  B. Leaves more or less orbicular to broadly elliptic :
    C. Calyx lobes round overlapping.
      Flowers 3·5-4 cm. long . . . . . **Wardii.**
    CC. Calyx lobes narrow divaricate.
      Flowers 2·5-3 cm. long . . . **astrocalyx.**
  BB. Leaves more or less oblong :
    C. Leaves glaucous and papillate below.
      Flowers 2-3·5 cm. long . . . . . **litiense.**
    CC. Leaves light green below.
      Flowers 3·5-4 cm. long . . . . **croceum.**

RHODODENDRON ASTROCALYX, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 13 (1920), 30.

Illustration—

Habit : a small shrub of 3-5 ft. ; young shoots at first glandular, older wood glabrous ; branches below inflorescences 3-4 mm. in diameter.

Leaves : lamina leathery, elliptic, shortly oval or obovate, 3-5·5 cm. long, 2-3·5 cm. broad ; apex rounded with a short mucro ; base rounded or semi-truncate ; upper surface at maturity glabrous, midrib grooved, primary veins about 12 on each side slightly impressed ; under surface pale green, smooth, very minutely flecked with vestiges of juvenile hairs and glands, midrib prominently raised, primary veins and vein reticulations conspicuous ; petiole 1-2 cm. long, grooved above and marked with vestiges of glands.

Inflorescence : a racemose umbel of 5-8 flowers ; rhachis 5 mm. long, tomentose and glandular.

Pedicels : 2 cm. long, sparingly clad with short-stalked glands.

Calyx : about 6 mm. long, split to near base into 5 spreading star-like oblong obtuse lobes, which are densely glandular on the back and gland-fringed.

Corolla : openly campanulate, pale yellow, 2·5-3 cm. long, outside glandular, inside puberulous ; lobes 5, 8-10 mm. long, 1·5 cm. broad.

Stamens : 10, 1-1·3 cm. long ; filaments puberulous.

Pistil : 2-2·5 cm. long ; ovary 4 mm. long, clad with short-stalked glands ; style glandular to tip and there expanded into a broadish lobulate stigma.

Capsule :

Habitat : North-Western Yunnan ; Mekong—Salween Divide. In open thickets at 11,000 ft. altitude.

R. astrocalyx is closely allied to *R. Wardii*, from which it differs in the smaller leaves, less cordate at the base, in the smaller flowers and in the peculiar calyx. The narrow diverging lobes of the calyx present a star-like appearance which suggested the specific name.

RHODODENDRON BONVALOTII, *Bur. & Franch.* in *Journ. de Bot.*, vol. 5 (1891), 94.

Illustration—

Habit : a shrub ; branchlets glabrous.

Leaves : lamina leathery, oblong-oblanceolate or narrowly elliptic, 4-5 cm. long, 1·5 cm. broad ; apex broadly acute ; base narrowed obtuse ; upper surface smooth, glabrous with longitudinal ridging towards the apex, midrib grooved, primary veins 12-14 on each side slightly impressed ; under surface glabrous with primary veins and vein reticulations conspicuous ; petiole 8 mm. long, round, glabrous.

Inflorescence : an umbel of few flowers.

Pedicels : about 1·5 cm. long, glandular with short-stalked glands.

Calyx : about 5 mm. long ; lobes 5, unequal, oval, rounded, fringed with glands as in *R. Souliei* and with a few glands on the back.

Corolla : widely campanulate, about 2·5 cm. long (rose ?) ; lobes 5, rounded, emarginate, 1 cm. long, 1·5 cm. broad.

Stamens : 10, unequal, 1-1·5 cm. long ; filaments glabrous.

Pistil : about 2 cm. long ; ovary ovoid, densely glandular ; style glandular to the tip.

Capsule :

Habitat : South-Western Szechuan. In the neighbourhood of Tatsienlu.

This is an imperfectly-known species. The foliage suggests that of *R. selense* but the flower characters are those of the Souliei subseries. Except for the leaf, it comes very near to *R. Souliei* itself.

RHODODENDRON CROCEUM, *Balf. f. & W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 10 (1917), 93.

(R. PRASINOCALYX, *Balf. f. & Forrest.*)

ILLUSTRATION—

HABIT : a shrub or small tree 15-20 ft. high ; young shoots at first more or less glandular, later glabrescent ; branches below inflorescences about 5 mm. in diameter.

LEAVES : lamina oblong, 5·5-12 cm. long, 2-6 cm. broad ; apex obtuse, mucronulate ; base truncate to cordulate ; margin at base more or less glandular ; upper surface dark green, slightly rugulose, midrib grooved, primary veins about 15 on each side slightly impressed ; under surface pale green, with vestiges of a thin juvenile tomentum, midrib prominent, primary veins slightly raised ; petiole 2-2·5 cm. long, at first more or less glandular, later glabrescent.

INFLORESCENCE : a racemose umbel of 7-8 flowers ; rhachis 1·5 cm. long, more or less glandular.

PEDICELS : 4-5 cm. long, glandular.

CALYX : about 1 cm. long, subfoliaceous ; lobes 5, unequal, oblong-rounded, yellowish-green, glandular at the base and gland-fringed.

COROLLA : openly cup-shaped, bright yellow sometimes with a basal crimson blotch, more or less glandular outside, 3·5 cm. long ; lobes 5, 1·5 cm. long, 2·8 cm. broad.

STAMENS : 10, unequal, 1-2 cm. long ; filaments glabrous.

PISTIL : about 2·5 cm. long ; ovary 6 mm. long, clad with long-stalked glands ; style glandular to the tip ; stigma lobulate.

CAPSULE : oblong, 1·5-2 cm. long, 5-10 mm. in diameter, slightly curved, encased at the base in the more or less persistent calyx.

HABITAT : North-Western Yunnan ; mountains of the Chung tien Plateau and north-east of the Yangtze bend. In thickets at 11,000-13,000 ft. altitude.

A very close ally of *R. Wardii*, from which it differs chiefly in the more oblong, less orbicular, leaves and a greater tendency to glandularness, which on the ovary is expressed by long-stalked glands.

RHODODENDRON LITIENSE, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 12 (1920), 126.

Illustration—

Habit : a shrub 4-9 ft. high ; young shoots densely glandular ; year-old branches about 3 mm. in diameter, glabrescent.

Leaves : lamina thinly leathery, oblong or oblong-oval, 4-7·5 cm. long, 2-3 cm. broad ; apex obtuse with a short apiculus ; base truncate or shallowly cordulate ; upper surface mat green, glabrous or with few traces of glands, midrib grooved, primary veins about 12 on each side shallowly grooved ; under surface papillate and glaucous, minutely punctulate with glands or gland vestiges, midrib raised, primary veins slightly raised ; petiole 1-1·5 cm. long, grooved on upper side, glabrescent, with traces of juvenile glands.

Inflorescence : a racemose umbel of 5-6 flowers ; rhachis 7 mm. long, sparingly glandular and floccose.

Pedicels : 1·5-2·5 cm. long, glandular.

Calyx : foliaceous, yellowish, about 7 mm. long ; lobes 5, elliptic or oblong, unequal, up to 6 mm. long, 3 mm. broad, more or less glandular on the back and gland-fringed.

Corolla : widely campanulate, yellow without blotch or spots, about 2-3 cm. long, glabrous outside ; lobes 5, about 1·3 cm. long, 2 cm. broad, undulate, slightly emarginate.

Stamens : 10, unequal, 1-2 cm. long ; filaments stout, glabrous.

Pistil : about 2·5 cm. long ; ovary about 4 mm. long, conoid, truncate, grooved, clad with stalked glands ; style glandular throughout ; stigma broad, lobulate.

Capsule : 1·5-2 cm. long, 5-8 mm. broad, slightly curved.

Habitat : Yunnan ; on the Li-ti-ping. In shady forests and margins of pine forests at 9000-10,000 ft. altitude.

A very interesting local species with *R. croceum* as its nearest of kin. Its distinction lies in its waxy glaucous leaf under surface, while its flowers are smaller than those of its ally. The pedicels in a young state are particularly bristly-glandular.

RHODODENDRON PURALBUM, *Balf. f. & W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 9 (1916), 266.

Illustration—

Habit : a shrub of 12-15 ft. ; young shoots about 3 mm. in diameter.

Leaves : lamina oblong-oval to oblong-ovate, 5-12 cm. long, 3-5 cm. broad ; apex gradually narrowed to an obtuse or subacute point ; base broadly rounded or truncate, at times cordulate ; upper surface dark green, at maturity glabrous, smooth, midrib slightly grooved, primary veins 9-12 on each side slightly impressed ; under surface bright glaucous green, glabrous at maturity, midrib raised at the leaf base, primary veins and vein reticulations readily distinguished ; petiole 2-3 cm. long, glabrous except for a few glands which occasionally spread to the leaf margin.

Inflorescence : a loose terminal umbel of about 8 flowers.

Pedicels : 3-4·5 cm. long, slender for their length, almost glabrous or with a few glands more numerous near the calyx cup.

Calyx : 7-10 mm. long ; lobes 5, unequal, rounded or oblong, greenish, 4-7 mm. long, 3-5 mm. broad, gland-fringed and more or less glandular on the back.

Corolla : open cup or saucer-shaped, pure white, 4 cm. long ; lobes 5, large, rounded, emarginate, 1·5 cm. long, 3 cm. broad.

Stamens : 10-12, unequal, 1-2 cm. long ; filaments puberulous at base.

Pistil : about 3 cm. long ; ovary about 4 mm. long, conoid, clad with stalked glands ; style glandular to the tip ; stigma lobulate.

Capsule :

Habitat : Yunnan ; mountains north-east of the Yangtze bend. In rhododendron and mixed scrub at 11,000-14,000 ft. altitude.

This white-flowered species is geographically far away from *R. Souliei* but agrees with it in not having the yellow flowers prevalent in this subseries. Apart from colour, its relationship is with *R. croceum*.

RHODODENDRON SOULIEI, *Franch.* (Modified copy of t. 8622 in *Bot. Mag.*)

A. Flowering shoot (about ⅔ natural size). B. Pistil. C. Ovary. D and E. Stamens. F. Section of ovary (enlarged).

RHODODENDRON SOULIEI, *Franch.* in *Journ. de Bot.*, vol. 9 (1895), 393.

(R. CORDATUM, *Lévl.*)

ILLUSTRATIONS—*Bot. Mag.*, vol. 141 (1915), t. 8622 ; *Gard. Chron.*, ser. 3, vol. 45 (1909), 380, fig. 167.

HABIT : a shrub of 6-12 ft. ; young shoots about 3 mm. in diameter, light glaucous green or purple, more or less glandular, older wood reddish-brown, glossy.

LEAVES : lamina leathery, broadly ovate, oblong-elliptic or almost orbicular, 3·5-7·5 cm. long, 2·5-5 cm. broad ; apex broadly obtuse ; base cordate, truncate or rounded ; margins of young leaves glandular towards the base ; upper surface dark green, glabrous, midrib a lighter colour hardly grooved, primary veins 8-12 on each side slightly impressed ; under surface a light glaucous green, glabrous, midrib prominent, primary veins and vein reticulations evident ; petiole 1·5-2·5 cm. long, glaucous green or purplish and more or less glandular with stalked glands.

INFLORESCENCE : a racemose umbel of 5-8 flowers ; rhachis about 5 mm. long.

PEDICELS : 2-3·5 cm. long, densely glandular with subsessile glands.

CALYX : about 7 mm. long, split almost to the base into 5 oblong, ovate, subfoliaceous, often pink-tinted lobes which are beaded on the margin with sessile glands.

COROLLA : openly cup or saucer-shaped, 2·5-3·5 cm. long, 5 cm. across, white to a soft or deeper rose ; lobes 5, 1·5 cm. long, 2 cm. broad, rounded, emarginate.

STAMENS : 10, unequal, 1-2 cm. long ; filaments white, glabrous.

PISTIL : about 2·5 cm. long ; ovary oblong-ovoid, densely glandular ; style glandular to the tip with dark-red glands.

CAPSULE :

HABITAT : Western Szechuan ; Tatsienlu. In woodlands and thickets at 9000-11,000 ft. altitude.

A very distinct species of limited distribution. It has been reported from Yunnan, but erroneously.

RHODODENDRON WARDII, *W. W. Sm.* in *Notes R.B.G. Edin.*, vol. 8 (1914), 205.

(R. GLOEOBLASTUM, *Balf. f. & Forrest*;
R. ORESTERUM, *Balf. f. & Forrest.*)

ILLUSTRATION—

HABIT: a shrub of 15-20 ft.; young shoots at first glandular, later glabrous.

LEAVES: lamina leathery, oblong-elliptic or semi-orbicular, 5-10 cm. long, 2-5 cm. broad; apex rounded or broadly obtuse, apiculate; base rounded, truncate or cordulate; upper surface dark green, glabrous at maturity, midrib grooved, primary veins 10-15 on each side impressed: under surface pale glaucous green, glabrous or with few vestiges of a juvenile tomentum, midrib prominent, primary veins and vein reticulations conspicuous; petiole 1·5-3 cm. long, stout, at first glandular, later glabrescent.

INFLORESCENCE: a racemose umbel of 7-14 flowers; rhachis 1-1·5 cm. long, tomentose and glandular.

PEDICELS: 2·5-4 cm. long, more or less glandular.

CALYX: cup-shaped, fleshy, 6-12 mm. long; lobes 5, unequal, oblong-oval or rounded, yellowish, fringed on the margin with glands.

COROLLA: cup-shaped, slightly fleshy, 3·5-4 cm. long, bright yellow; lobes 5, 2 cm. long, 2·5-3 cm. broad, emarginate.

STAMENS: 10, 1-2 cm. long; filaments glabrous.

PISTIL: 2-2·5 cm. long; ovary conoid, 5 mm. long, clad with small glands; style glandular to the tip.

CAPSULE: 1·5-2·5 cm. long, 5-7 mm. broad, very slightly curved, encased in the more or less persistent calyx.

HABITAT: Western Yunnan; Mekong—Salween Divide and Salween—Kiu chiang Divide. In scrub and forest belt, open thickets and forests at 12,000-14,000 ft. altitude.

This is the centre of a group which embraces all the yellow-flowered species of the subseries. *R. croccum* is its only yellow rival in the subseries as regards size and quality of its flowers.

RHODODENDRON WILLIAMSIANUM, *Rehder & Wilson* in *Pl. Wilsonianae* (1913), 538.

Illustration—*Bot. Mag.*, vol. 148 (1922), t. 8935.

Habit : a shrub of 3-5 ft., branching horizontally to form a flattish bush ; branches thin, when young sparsely glandular with long-stalked glands, later glabrous.

Leaves : lamina leathery, broadly elliptic to rounded, ovate or cordate, 1·5-4 cm. long, 1·3-3·3 cm. broad ; apex rounded or blunt ; base cordate, rarely truncate ; upper surface bright green, midrib slightly impressed, primary veins about 6 on each side slightly impressed ; under surface glaucous, papillate, punctulate with small glands and hairs, midrib and primary veins and vein reticulations conspicuous ; petiole green or reddish, 7-13 mm. long, sparsely clad with long-stalked glands which may extend to the margin of the leaf base.

Inflorescence : a racemose umbel of 3-5 flowers.

Pedicels : about 2 cm. long, at first glandular with stalked glands, later glabrous.

Calyx : minute, glandular, about 1·5 mm. long, with 5 short rounded lobes.

Corolla : campanulate, 3-4 cm. long, pale rose without spots ; lobes 5, rounded or suborbicular, shallowly emarginate, 1·4 cm. long, 2 cm. broad.

Stamens : 10, unequal, 1·5-3 cm. long ; filaments glabrous.

Pistil : about 4 cm. long ; ovary oblong-conoid, green, glandular, 4-5 mm. long ; style curved, clad with glands throughout, glands on lower half stalked, those towards stigma more or less sessile.

Capsule : oblong-cylindric, 1·5 cm. long, 5 mm. in diameter, glabrous or sparsely clad with stalked glands, 5-6-chambered ; the small calyx persistent at the base.

Habitat : Szechuan. In thickets at 8000-10,000 ft. altitude.

This species is included in the subseries by reason of its glandular style. It may have affinity with *R. Souliei* and possibly with *R. callimorphum*. It deviates from the general type of the subseries in its habit and in the campanulate corolla, which has not the bowl-like shape of the flowers of the other members. The small calyx also is exceptional in the subseries.

THOMSONII SERIES

SUBSERIES THOMSONII

This is the central group of the series. The general appearance of the leaf is a good guide to the facies of the subseries ; other points are the lack or scanty development of indumentum, the comparative scarcity of stalked glands on the vegetative parts, the large cupular persistent calyx, the tubular to bell-shaped fleshy corolla, the prevalence of red in corolla colour, the prominence of the five pouched nectaries at the base of the corolla, the glabrous style (except in *R. cerasinum*), and the broad blunt ribbed fruit often with a plum-like bloom.

The distribution of the subseries extends from Eastern Nepal to Western Yunnan.

Where glands are present they are usually confined to the ovary. It may be noted that in three outstanding eglandular species there is a linked variety with conspicuous glands on the ovary. Thus are associated together *R. Thomsonii* with *R. candelabrum, R. cyanocarpum* with *R. eriphyllum,* and *R. Meddianum* with its variety *atrokermesinum*. The petiole in the subseries is usually well developed, but in *R. eclecteum* and its varieties there is combined with a characteristic leaf shape a distinct shortening of the leaf-stalk. *R. Hookeri* is somewhat anomalous in the subseries by reason of its more elongated leaves with their very distinct bead-like tufts of hairs on the lateral veins.

THOMSONII SERIES

SUBSERIES THOMSONII

KEY TO THE SPECIES

A. Leaf more or less oval, *rounded at both ends.*
Indumentum none or obscure (except *R. Hookeri*).
Petioles long.
Ovary generally *glabrous,* sometimes glandular, style glabrous:
B. Lateral veins naked:
C. Flowers white to rose, calyx light green:
D. Ovary glabrous . . . . . **cyanocarpum.**
DD. Ovary glandular . **cyanocarpum** *var.* **eriphyllum.**
CC. Flowers crimson, rarely pale rose; calyx green at base, tinted at top:
D. Ovary glabrous . . . . . **Thomsonii.**
DD. Ovary glandular . **Thomsonii** *var.* **candelabrum.**
CCC. Flowers deep crimson, calyx wholly red:
D. Ovary glabrous . . . . . **Meddianum.**
DD. Ovary glandular . **Meddianum** *var.* **atrokermesinum.**
BB. Lateral veins with bead-like tufts of hairs . **Hookeri.**
AA. Leaf *obovate,* jargonelle-pear-shaped, *base cuneate.*
Indumentum *none* except sometimes along midrib.
Petioles short for size of leaf.
Ovary glandular, style glabrous . . . **eclecteum.**
AAA. Leaf more or less *broadly obovate* to elliptic.
Indumentum very *thin, farinose,* evanescent.
Petiole long.
Ovary more or less glandular, style glabrous
Stewartianum.
AAAA. Leaf oblong-elliptic.
Indumentum *none, under surface glaucous.*
Ovary densely glandular, *style glandular to tip*
cerasinum
AAAAA. Leaf *oblong to oblanceolate.*
Indumentum *none.*
Ovary glabrous, style glabrous . . . **hylaeum**

RHODODENDRON CERASINUM, *Tagg, sp. nov.*

Illustration—

Habit : a medium-sized thick-set bush as much as 10-12 ft. high ; shoots below inflorescences about 3 mm. diameter, glabrous at maturity.

Leaves : lamina oblong to oblong-elliptic, about 6·5 cm. long, 2·3 cm. broad ; apex obtuse ; base obtuse to semi-rounded ; upper surface minutely rugulose, glabrous at maturity but with vestiges of straggling hairs in the groove of the midrib, primary veins 14-16 on each side slightly impressed ; under surface subglaucous, glabrous, midrib prominently raised, sparsely glandular and floccose, lateral veins obscure ; petiole about 1 cm. long, grooved above, rounded below, more or less glandular and floccose, ultimately glabrescent.

Inflorescence : an umbellate truss of 6-7 pendulous flowers ; rhachis short, about 5 mm. long.

Pedicels : about 2 cm. long, densely glandular with ovoid subsessile glands.

Calyx : somewhat fleshy, 3-5 mm. long, densely glandular, the flattish limb undulate with 5 obscure or broadly rounded or broadly ovate lobes, glandular on the back and fringed with ovoid sessile glands.

Corolla : campanulate, 3·5-4·5 cm. long, creamy-white with a broad cherry-red band round the summit, or cherry red or brilliant scarlet, the base fleshy and pouched with 5 deep purple nectaries ; lobes 5, 1·5 cm. long, 2 cm. broad, margin undulate.

Stamens : 10, subequal, 2·7-3·3 cm. long ; filaments glabrous, anthers reddish-brown.

Pistil : 3·5 cm. long ; ovary conoid, truncate, 8 mm. long, 4 mm. broad, densely glandular with subsessile glands ; style stout, glandular to the tip with sessile glands ; stigma lobulate, 2 mm. broad.

Capsule :

Habitat : South-Eastern Tibet ; Seinghku Wang. In dense rhododendron thickets and on the edge of the bands of Abies forest at 11,000 ft. altitude.

The nearest ally of this species appears to be *R. Stewartianum*, from which it differs among other points in the style being glandular to the tip, a feature which is quite exceptional in the subseries Thomsonii.

RHODODENDRON CYANOCARPUM (*Franch.*), *W. W. Sm.* in *Trans. Bot. Soc. Edin.*, vol. 26 (1914), 274.

(R. THOMSONII, *Hook. f.*, var. CYANOCARPUM, *Franch.*; R. HEDYTHAMNUM, *Balf. f. & Forrest, var.* EGLANDULOSUM, *Hand.-Mazz.*)

ILLUSTRATION—

HABIT: a shrub or small tree of 5-20 ft.; young vegetative shoots glaucous green, older wood light brown; shoots below inflorescences about 5 mm. in diameter.

LEAVES: lamina broadly elliptic to orbicular, 5-11 cm. long, 4-7 cm. broad; apex rounded; base rounded or slightly cordulate; upper surface dark mat green, smooth, midrib a light-green line, primary veins 10-15 on each side slightly impressed; under surface smooth, glaucous green, to the eye glabrous but with minute hairs and a few glands, midrib prominent, primary veins and vein reticulations conspicuous; petiole 1·5-3 cm. long, glaucous green, stout, sparsely glandular.

INFLORESCENCE: a loose umbel of 8-10 flowers; rhachis about 5 mm. long, glabrous.

PEDICELS: 1-1·5 cm. long, glabrous.

CALYX: cup-like, about 1 cm. long, thick and fleshy at base, with 5 thinner broad unequal lobes, rounded or truncate, greenish, glaucous, glabrous.

COROLLA: widely funnel-campanulate, 5-6 cm. long, white or creamy-white flushed rose or a rich soft rose; lobes 5, about 1·5 cm. long, 2·5 cm. broad, emarginate.

STAMENS: 10, unequal, 2-4 cm. long; filaments glabrous.

PISTIL: 4·5 cm. long; ovary conical, grooved, glabrous or with a few glands, 7 mm. long; style glabrous.

CAPSULE: 1-1·5 cm. long, oblong, blunt, with a bluish plum-like bloom.

HABITAT: Western Yunnan; eastern and western flanks of the Tali Range. Open moist situations, mountain meadows and margins of pine forests at 10,000-13,000 ft. altitude.

R. cyanocarpum was first described by Franchet as a variety of *R. Thomsonii* and he laid stress on the colour of the fruits in his choice of a name. It is certainly a close ally of the Himalayan species, but is easily recognised by the white or rose flowers. *R. criphyllum*, Balf. f. MS., is a variety of this species with a densely glandular ovary.

RHODODENDRON ECLECTEUM, *Balf. f. & Forrest* in *Notes R.B.G. Edin.*, vol. 12 (1920), 105.

Illustration—

Habit : a shrub about 7 ft. high with stout, straight branches ; young shoots sparsely glandular, branches below inflorescences about 5 mm. in diameter.

Leaves : lamina leathery, obovate or oblong, 6·5-14·5 cm. long, 3-6 cm. broad ; apex rounded, often semi-emarginate ; base cordulate ; upper surface glaucous, midrib slightly grooved, a light-green line, primary veins 12-15 on each side slightly impressed ; under surface pale green, glabrous, midrib raised more or less pubescent, primary veins very slightly raised ; petiole broad, as much as 1·5 cm. long, usually much less, glaucous, glabrous or with a few stalked glands.

Inflorescence : a racemose umbel of about 12 flowers ; rhachis glabrous, about 1·5 cm. long.

Pedicels : stout, 1-2 cm. long, glaucous, glabrous.

Calyx : fleshy, 1-2 cm. long ; lobes 5, variable in size, ovate or oblong-oval, glabrous.

Corolla : tubular-campanulate, 4·5 cm. long, fleshy, white to deep rose, sometimes rose-magenta or rarely yellowish, unspotted or more or less spotted ; lobes 5, rounded, emarginate, 1 cm. long, 2 cm. broad.

Stamens : 2-3 cm. long ; filaments glabrous or puberulous.

Pistil : about 4 cm. long ; ovary 5 mm. long, ovoid, grooved, truncate, densely glandular ; style stout, glabrous.

Capsule : cylindric, about 2 cm. long, 7 mm. in diameter, grooved, glandular, enclosed at base in persisting calyx.

Habitat : South-Eastern Tibet ; Mekong Salween Divide. In rhododendron thickets at 13,000 ft. altitude.

R. eclecteum is marked from the rest of the Thomsonii subseries by its large oblong-obovate leaves, which have been compared in shape to a jargonelle pear, and by its very short petioles. *R. brachyandrum* is a variety of the species with dark much-spotted flowers and shorter stamens. A form with smaller leaves, bright-rose flowers and puberulous stamens has received the varietal name *bellatulum*. Recent gatherings by Captain Kingdon Ward extend the distribution westward to Seinghku Wang, lat. 28° 8′ N., long. 97° 24′ E., where it appears as a variety with almost sessile leaves and whitish or rose-pink flowers.

RHODODENDRON HOOKERI, *Nutt.* in *Hook. Kew Journ.*, vol. 5 (1853), 359.

ILLUSTRATION—*Bot. Mag.*, vol. 82 (1856), t. 4926.

HABIT : a tall erect shrub of 12-14 ft. ; young vegetative shoots at first glaucous, with a waxy farina, later green, older wood brownish.

LEAVES : lamina oblong or oblong-oval, 8-14 cm. long, 3-5 cm. broad ; apex obtuse, apiculate ; base obtuse or rounded ; upper surface smooth, mat, midrib deeply grooved a light-green line, primary veins about 11 on each side, impressed ; under surface light glaucous green, midrib prominently raised, lateral veins slightly raised, studded with isolated hair-tufts which at first are white, ultimately brown ; petiole stout, 2-3 cm. long, rounded below, flattish above, hardly grooved, green beneath a thin white waxy farina.

INFLORESCENCE : a corymb of 10-15 flowers.

PEDICELS : about 1 cm. long, green, glabrous.

CALYX : large, coloured, 1-2 cm. long, glabrous ; lobes 5, unequal, irregular, the two posterior ones the largest.

COROLLA : tubular - campanulate or funnel - shaped, deep crimson with 5 deep-red blotches at base, about 4 cm. long ; lobes 5, rounded.

STAMENS : 10, unequal, 1·5-3 cm. long ; filaments glabrous, pink below, white above.

PISTIL : about 3·5 cm. long ; ovary 5 mm. long, glabrous, smooth ; style glabrous.

CAPSULE : 2-2·5 cm. long, 7-8-chambered, cylindric-ovate, light brown, covered at base by the persistent calyx.

HABITAT : Bhutan ; northern slopes of the Labling Pass, Oola Mountains. Forming thickets at 8000-9000 ft. altitude.

The peculiar lines of hairs on the veins of the under side of the leaf render this one of the most easily recognised of rhododendrons. It lacks the more or less orbicular leaves of its nearest allies.

RHODODENDRON LOPSANGIANUM, *Cowan* in *Notes R.B.G. Edin.*, vol. 19 (1937), 250.

Illustration—

Habit : a shrub 2-6 ft. high ; branchlets yellowish-green, those below inflorescence about 2 mm. in diameter.

Leaves : thinly leathery, lamina oblong-elliptic, oblong-oval or oval, up to 5 cm. long, 4 cm. broad ; apex obtuse or rounded, mucronate ; base broadly rounded or cordulate ; upper surface pale green, towards the midrib punctulate with vestiges of glands, otherwise glabrous ; primary veins 9 on each side, conspicuous ; under surface glaucous, densely covered with long conspicuous waxy pegs and with a few scattered glands, nerves obscured ; petiole 1 cm. long, densely clad with short stalked glands.

Inflorescence : a terminal umbel of 3-5 flowers.

Pedicels : 2 cm. long, glabrous, expanded below the calyx.

Calyx : cup-shaped, about 3 mm. long, fleshy, crimson, glabrous, margin irregularly lobed or fimbriate.

Corolla : campanulate to funnel-campanulate, 3·5 cm. long, glabrous deep fleshy crimson ; lobes 5, 6 mm. long, 1·5 cm. broad, rounded, emarginate.

Stamens : 10, unequal, 2-2·5 cm. long ; filaments glabrous or puberulous.

Pistil : about 3·8 cm. long ; ovary truncate, conoid, 6 mm. long, 3 mm. broad, sparsely clothed with shortly stalked glands or entirely glabrous ; style glabrous.

Capsule : oblong, 1·5 cm. long, 5 mm. wide.

Habitat : Southern Tibet, Tsari Chu, Chayul Chu. Alt. 8,000-14,000 ft.

Similar in shape of leaf and flower colour to *R. Thomsonii*. A remarkable species in the Thomsonii group in which the undersides of the leaves are covered with long conspicuous waxy pegs.

RHODODENDRON HYLAEUM, *Balf. f. & Farrer* in *Notes R.B.G. Edin.*, vol. 13 (1922), 265.

Illustration—

Habit : a round-headed tree of 20-40 ft. ; young shoots at first densely glandular, later glabrous, older branches smooth, decorticated, those below inflorescences about 7 mm. in diameter.

Leaves : lamina leathery, oblong or oblong-oval, 8-12 cm. long, 3-4 cm. broad ; apex obtuse or rounded ; base obtuse or semi-cordulate ; upper surface of young leaves somewhat floccose and glandular, at maturity glabrous, mat, smooth, midrib grooved, primary veins about 18 on each side not conspicuous or very slightly impressed ; under surface pale green, semi-glaucous, at first clad with scattered hairs along the primary veins and with a few glands, at maturity minutely punctulate, epidermis somewhat papillate, mat, not shining, midrib prominent, primary veins evident but not conspicuously raised ; petiole about 1·5 cm. long, at first sparsely glandular and floccose, at maturity glabrous, subglaucous.

Inflorescence : a racemose umbel of 10-12 flowers ; rhachis about 2 cm. long, pubescent.

Pedicels : about 1 cm. long, glabrous or almost so.

Calyx : large, 8 mm. long, cuplike, more or less fleshy, greenish, undulately 5-lobed, glabrous or sparse floccose at the thickened base, often deflexing.

Corolla : tubular-campanulate, fleshy, with 5 basal nectar pouches, 4·5 cm. long, pale rose, more or less dappled a deeper tint on all the petals ; lobes 5, 1·5 cm. long, 2·5 cm. broad, deeply emarginate.

Stamens : 10, unequal, 2-3·5 cm. long ; filaments glabrous.

Pistil : about 4 cm. long ; ovary dome-shaped, 6 mm. long, 4 mm. broad, glabrous, 8-chambered ; style glabrous.

Capsule : oblong-globose, about 1·5-2 cm. long, 7-8 mm. broad, distinctly ridged, blackish with a slight glaucous bloom, glabrous, 7-8-chambered.

Habitat : North-Eastern Upper Burma ; Chawchi Pass. At 10,500 ft. altitude.

A species which in its leaf shape recalls somewhat that of *R. eclecteum*, from which species it differs in the glabrous ovary. A characteristic feature is the peeling of the bark of the branchlets, leaving the wood almost bare and of a glaucous purple tint in the dry state. The calyx is typically that of the subseries Thomsonii.

RHODODENDRON MEDDIANUM, *G. Forrest* in *Notes R.B.G. Edin.*, vol. 12 (1920), 136.

ILLUSTRATION—

HABIT : a shrub of about 6 ft. ; young shoots glaucous, glabrous ; year-old branches about 8-10 mm. in diameter.

LEAVES : lamina leathery, oval or oblong-oval or oblong, 6·5-15 cm. long, 3·5-8 cm. broad ; apex rounded, truncate or retuse ; base obtuse or rounded ; upper surface dark glaucous green, midrib shallowly grooved a light-green line, primary veins 10-12 on each side slightly prominent ; under surface pale, glabrous, epapillate, midrib raised, primary veins and vein reticulations conspicuous ; petiole broad, about 2 cm. long, glaucous, glabrous, grooved above.

INFLORESCENCE : a terminal umbel of 5-10 flowers.

PEDICELS : about 1 cm. long, stout, glabrous, reddish.

CALYX : as much as 1 cm. long, cup-shaped, fleshy, glabrous ; lobes 5, unequal, rounded.

COROLLA : tubular-campanulate, 4-6 cm. long, fleshy, rich deep crimson, base 5-pouched ; lobes 5, rounded, emarginate, crenulate, 1·5 cm. long, 2·5 cm. broad.

STAMENS : 10, unequal, 3-4·5 cm. long ; filaments glabrous.

PISTIL : about 5 cm. long ; ovary 5 mm. long, conoid, truncate, grooved, glabrous (or glandular) ; style glabrous.

CAPSULE : broadly cylindric, slightly curved, 1·7 cm. long, 7 mm. broad, glabrous (or glandular).

HABITAT : Western Yunnan and North-Eastern Upper Burma. Shweli—Salween and N'Maikha—Salween Divides. In open rhododendron scrub at 10,000-11,000 ft. altitude.

R. Meddianum is the Chinese *R. Thomsonii*. It differs in the less rounded leaves, the larger flowers, the more highly coloured calyx, and the deeper colour of the corolla. Its variety, var. *atrokermesinum*, with glandular ovary, has still darker and larger flowers.

RHODODENDRON STEWARTIANUM, *Diels* in *Notes R.B.G. Edin.*, vol. 5 (1912), 211.

(R. AIOLOSALPINX, *Balf. f. & Farrer*;
R. NIPHOBOLUM, *Balf. f. & Farrer*.)

ILLUSTRATION—

HABIT: a small graceful bush of 3-7 ft.

LEAVES: lamina leathery, obovate to elliptic, 5-12 cm. long, 3-6·5 cm. broad; apex rounded or obtuse; base blunt or rounded; upper surface bright green, more or less glaucous, midrib impressed, primary veins about 12 on each side; under surface minutely papillate beneath a thin smooth evanescent creamy-yellow farinose indumentum, midrib prominent, primary veins and veinlets obscure; petiole 1 cm. or less long, slightly grooved, thinly farinose or glabrous.

INFLORESCENCE: a terminal umbel of 3-7 flowers.

PEDICELS: about 1-2·5 cm. long, glabrous or more or less glandular.

CALYX: cup-shaped, variable in size about 1 cm. long, glabrous, greenish-yellow or rarely tinted crimson; lobes 5, unequal, glabrous or rarely gland-fringed.

COROLLA: tubular-campanulate, 4·5 cm. long, very variable in colour from pure white or clear soft yellow through white flushed rose to deep rose margined deep crimson, with or without markings, base with 5 gibbous nectaries; lobes 5, rounded, emarginate, 1·5 cm. long, 2·5 cm. broad.

STAMENS: 10, unequal, 2·5-3·5 cm. long; filaments densely puberulous at base.

PISTIL: about 4 cm. long; ovary 6 mm. long, glandular, very rarely glabrous; style glabrous.

CAPSULE: oblong, blunt, 1·5-2·5 cm. long, 6-10 mm. broad, blackish, encased at base by the more or less persistent calyx.

HABITAT: North-Eastern Upper Burma; Western Yunnan and South-Eastern Tibet. In bamboo brake, rhododendron thickets, and rocky slopes at 10,000-14,000 ft. altitude.

As compared with its allies, *R. Stewartianum* is usually a plant of less stature with smaller leaves. It is a very variable species, and as here defined includes both *R. aiolosalpinx* and *R. niphobolum*. The degree of glandularness of the ovary varies, and glands may develop also on calyx and pedicels.

RHODODENDRON THOMSONII, *Hook. f.* (Copied from t. 4997 in *Bot. Mag.*)

A. Flowering shoot (about $\frac{2}{3}$ natural size). B. Calyx and style. C. Section of ovary. D. Ovary and base of style, calyx removed. E. Stamen. F. Fruit with persistent calyx.

RHODODENDRON THOMSONII, *Hook. f.* in *Rhodo. Sikkim Himalaya* (1851), 13.

Illustrations—Hook. f., *Rhodo. Sikkim Himalaya* (1851), t. 12 and t. 29 ; *Bot. Mag.*, vol. 83 (1857), t. 4997.

Habit : a bush or small tree of 6-14 ft. ; shoots one year old about 4 mm. in diameter, green with an evanescent waxy bloom.

Leaves : lamina orbicular, 4-8 cm. long, 3-6·5 cm. broad ; apex round with blunt mucro ; base round or cordulate ; upper surface dark green, at first glaucous, later smooth glabrous or with vestiges of glands, midrib slightly grooved, light green, primary veins about 9 on each side, light green, not sunk ; under surface whitish to pale green, glaucous, midrib prominent, green, lateral veins raised ; petiole 1-2 cm. long, rounded, slightly grooved, glaucous green with an evanescent white waxy bloom and a few glands.

Inflorescence : a loose corymb of 6-8 flowers ; rhachis about 1 cm. long.

Pedicels : 1-2 cm. long, glaucous, glabrous.

Calyx : large, 1-2 cm. long, cup-shaped, upper half more or less tinted red, lower half green, split into 5 rounded or truncate lobes of unequal size.

Corolla : campanulate, 5-6 cm. long, fleshy and waxy, deep blood-red, spotted on the upper posterior part ; lobes 5, 1·5 cm. long, 2·5 cm. broad, emarginate.

Stamens : 10, unequal, 2-4·5 cm. long ; filaments glabrous, white.

Pistil : about 4·7 cm. long ; ovary conoid-cylindric, 7 mm. long, glabrous, furrowed, 6-10-celled ; style glabrous.

Capsule : broadly oblong, truncate, 1·5-2 cm. long, 8 mm. broad, glaucous-purple, glabrous, the lower half encased in the persistent calyx.

Habitat : Sikkim and Nepal. At 11,000-13,000 ft. altitude.

R. Thomsonii in its typical form is characterised by its glabrous ovary, but like *R. Meddianum* and *R. cyanocarpum* it shows a tendency to glandularness in its variety, var. *candelabrum*. This variety is distinguished from the type by its shorter and distinctly lobed calyx, glandular at the margin, paler-coloured corolla, and an ovary conspicuously glandular.

TRICHOCLADUM SERIES

General Characters :—Small to medium-sized shrubs, with deciduous or subevergreen thin leaves. Leaves laxly scaly below. Inflorescence terminal, usually 2-4-flowered. Flowers precocious, yellow. Calyx well developed, usually fringed with long hairs. Corolla small to medium sized, scaly outside. Stamens 10, exserted, pubescent in the lower part, sometimes some glabrous. Ovary scaly and sometimes bristly; style usually glabrous, often sharply bent. Capsule short.

Distribution :—Northern Burma, Southern Tibet and Yunnan.

A very distinct series, with a general tendency towards the *Azalea* group, with usually deciduous leaves and precocious flowers.

J. H.

KEY TO THE SPECIES

A. Ovary scaly but not bristly :
- B. Flower-stalks scaly or pilose :
  - C. Flower-stalks pilose and scaly :
    - D. Leaves permanently hairy above ; calyx fringed with long hairs . . . . . **trichocladum.**
    - D. Leaves soon glabrous above ; calyx not fringed with hairs . . . . . **melinanthum.**
  - C. Flower-stalks pilose but not scaly . . **oulotrichum.**
  - C. Flower-stalks scaly but not pilose :
    - D. Calyx well developed . . . **mekongense.**
    - D. Calyx obsolete :
      - E. Flowers deep yellow ; leaves deciduous :
        - F. Calyx-lobes not ciliate . . . **semilunatum.**
        - F. Calyx-lobes ciliate . . . . **lithophilum.**
      - E. Flowers flushed with rose ; leaves subevergreen **rubrolineatum.**
- B. Flower-stalks glabrous . . . . **chloranthum.**

A. Ovary scaly and bristly :
- B. Style scaly . . . . . **lepidostylum.**
- B. Style glabrous . . . . . **lophogynum.**

RHODODENDRON CHLORANTHUM, *Balf. f. & Forrest.*

Illustration—

Habit: shrub 2-4 ft. high; branchlets nearly glabrous; leaf-bud-scales early deciduous.

Leaves: deciduous, obovate, rounded at the apex and mucronate, about 1 in. long and $\frac{2}{3}$ in. broad, long-pilose on the midrib and margins when young, glabrous above, scaly below, the scales about 2-3 times their own diameter apart; leaf-stalks long-pilose.

Inflorescence: terminal, about 4-flowered; flower-bud-scales persistent during flowering; flower-stalks 1 in. long, *glabrous*.

Flowers: precocious, yellow, tinged with green at the base.

Calyx: short, triangular-lobed, lobes slightly scaly on the margin, *glabrous* outside.

Corolla: widely funnel-shaped, $\frac{3}{4}$ in. long, glabrous outside, except for a few scales on the back of the lobes.

Stamens: 10, exserted, villous in the lower half.

Ovary: loosely *scaly*; style curved, thick, glabrous.

Capsule:

Habitat: North-Western Yunnan, 11,000 ft., open situations.

RHODODENDRON LEPIDOSTYLUM, *Balf. f. & Forrest.*

Illustration—

Habit: shrub about 1 ft. high; branchlets densely bristly and scaly; leaf-bud-scales persistent.

Leaves: subevergreen, ovate or obovate, about $1\frac{1}{2}$ in. long and $\frac{2}{3}$ in. broad, setulose on the margin, somewhat glaucous below and densely scaly, the scales not contiguous; leaf-stalks about $\frac{1}{4}$ in. long, bristly and scaly.

Inflorescence: terminal, 2-flowered; flower-stalks $1\frac{1}{4}$ in. long, *scaly and bristly*.

Flowers: pale yellow.

Calyx: $\frac{1}{3}$ in. long, lobes green, oblong, with large white scales on the outside, densely bristly all over the back and margin.

Corolla: about 1 in. long, shortly pubescent and scaly outside.

Stamens: 10, exserted, villous towards the base.

Ovary: *densely scaly and bristly*; style scaly towards the base.

Capsule:

Habitat: Western Yunnan, summit of the Jangtzow Shan, 11,000-11,500 ft., open situations on cliffs.

RHODODENDRON LITHOPHILUM, *Balf. f. & Ward.*

Illustration—

Habit : shrub 2-3 ft. high ; branchlets not bristly, sparingly scaly.

Leaves : appearing with the flowers, obovate, narrowed at the base, $1\frac{1}{4}$ in. long, nearly $\frac{1}{2}$ in. broad, glabrous above, scaly below, the scales about $\frac{1}{4}$ in. apart ; leaf-stalks $\frac{1}{6}$ in. long, scaly.

Inflorescence : terminal, 2-4-flowered ; flower-stalks $\frac{1}{3}$ in. long, *sparingly scaly*.

Flowers : pale sulphur-yellow.

Calyx : very small, slightly bristly on the margin.

Corolla : $\frac{3}{4}$ in. long, scaly outside.

Stamens : 10, exserted, pubescent towards the base.

Ovary : *densely scaly* ; style glabrous, shorter than the corolla.

Capsule :

Habitat : North-Eastern Burma, western spur of Imaw Bum, 12,000 ft., amongst granite boulders.

RHODODENDRON LOPHOGYNUM, *Balf. f. & Forrest.*

Illustration—

Habit: shrub 2-3 ft. high; branchlets nearly glabrous; leaf-bud-scales early deciduous.

Leaves: deciduous, oblanceolate, mucronate, about 1 in. long and $\frac{1}{3}$ in. broad (young state), crisped-pilose on both surfaces, laxly scaly below, the scales about 4-5 times their own diameter apart; leaf-stalks pubescent and scaly.

Inflorescence: terminal, about 3-flowered; flower-bud-scales early deciduous; flower-stalks $\frac{1}{3}$ in. long, *pilose and scaly*.

Flowers: precocious, yellow.

Calyx: lobes densely covered with curly hairs.

Corolla: as in *R. trichocladum*.

Stamens: 10, exserted, villous in the lower part.

Ovary: *densely scaly* and clothed with long weak hairs; style abruptly curved, thick, glabrous.

Capsule: $\frac{1}{3}$ in. long, scaly.

Habitat: Yunnan, Shweli—Salween Divide, 10,000-11,000 ft.; open rocky slopes and cliffs.

RHODODENDRON MEKONGENSE, *Franch.*

Illustration—

Habit : shrub up to 4 ft. high ; branchlets soon glabrous ; leaf-bud-scales early deciduous.

Leaves : deciduous, oblanceolate, mucronate, about $1\frac{1}{4}$ in. long and $\frac{1}{3}$ in. broad, weakly ciliate on the margin, scaly below, the scales about 2-3 times their own diameter apart ; leaf-stalks pilose.

Inflorescence : terminal, about 3-4-flowered ; flower-bud-scales early deciduous ; flower-stalks $\frac{1}{2}$ in. long, *scaly but not pilose.*

Flowers : precocious, pale yellow tinged with green.

Calyx : $\frac{1}{4}$ in. long, lobes oblong, fringed with long bristles, scaly outside.

Corolla : widely funnel-shaped, 1 in. long, sparingly scaly only outside the lobes.

Stamens : 10, exserted, some of them pubescent in the lower half, the others glabrous.

Ovary : *densely scaly* ; style slightly curved thick, glabrous.

Capsule :

Habitat : Eastern Tibet and Yunnan, 11,000 ft., margins of forests.

RHODODENDRON MELINANTHUM, *Balf. f. & Ward.*

Illustration—

Habit : shrub 6-8 ft. high ; branchlets with long bristles and slightly scaly ; leaf-bud-scales early deciduous.

Leaves : narrowly obovate or oblanceolate, up to $1\frac{1}{2}$ in. long and $\frac{3}{8}$ in. broad, thin, not hairy above, glaucous and scaly below, the scales not contiguous, unequal-sized ; leaf-stalks about $\frac{1}{6}$ in. long.

Inflorescence : terminal, about 4-flowered ; flower-stalks $\frac{2}{3}$ in. long, *slightly scaly and bristly*.

Flowers : yellow, precocious.

Calyx : small, scarcely hairy or scaly.

Corolla : $\frac{3}{4}$ in. long, sparingly scaly outside.

Stamens : 10, exserted, some villous towards the base, others shortly puberulous.

Ovary : *densely scaly* ; style longer than the corolla, glabrous.

Capsule :

Habitat : Eastern Upper Burma, Ka-gwr-pw glacier, 12,000-14,000 ft.

RHODODENDRON OULOTRICHUM, *Balf. f. & Forrest.*

Illustration—

Habit: shrub 2-4 ft. high; branchlets nearly glabrous; leaf-bud-scales early deciduous.

Leaves: deciduous, obovate-elliptic, rounded and mucronate at the apex, 1 in. long, $\frac{2}{3}$ in. broad, pilose on the midrib below and margin when young, loosely scaly below, the scales several times their own diameter apart.

Inflorescence: terminal, about 3-flowered; flower-bud-scales early deciduous; flower-stalks $\frac{1}{2}$ in. long, *long-pilose but not scaly.*

Flowers: precocious, yellow.

Calyx: well developed, $\frac{1}{6}$ in. long, lobes oblong, densely fringed with long hairs.

Corolla: widely funnel-shaped, $\frac{3}{4}$ in. long, loosely scaly outside.

Stamens: 10, exserted, all pubescent except about two.

Ovary: *densely scaly*, style curved, thick, glabrous.

Capsule: $\frac{1}{3}$ in. long, laxly scaly.

Habitat: Western Yunnan, Shweli—Salween Divide, 10,000 ft., open dry pasture.

RHODODENDRON RUBROLINEATUM,* *Balf. f. & Forrest.*

Illustration—

Habit: shrub up to 5 ft. high; branchlets scaly; leaf-bud-scales early deciduous.

Leaves: subpersistent, obovate-elliptic, mucronate, about $1\frac{1}{4}$ in. long and $\frac{2}{3}$ in. broad, soon glabrous above, densely scaly below, the scales minute and about their own diameter apart; leaf-stalks $\frac{1}{12}$ in. long, slightly bristly.

Inflorescence: terminal and lateral, about 3-flowered; flower-bud-scales early deciduous; flower-stalks $\frac{3}{4}$ in. long, *laxly scaly.*

Flowers: yellow, lined and flushed with rose on the outside.

Calyx: very short, undulate, scaly outside.

Corolla: widely funnel-shaped, $\frac{3}{4}$ in. long, loosely scaly outside.

Stamens: 10, exserted, pubescent in the lower part.

Ovary: *densely scaly*; style straight, glabrous.

Capsule: $\frac{1}{3}$ in. long, slightly scaly

Habitat: North-Western Yunnan, 11,000-12,000 ft., open pastures.

* This species is closely connected with the *Triflorum* series, and might be equally well placed in that group.

RHODODENDRON VIRIDESCENS, *Hutchinson in Gard. Chron.*, xciv. (1933), 116.

Illustration—

Habit : lower evergreen shrub up to 0·5 m. high, forming clumps ; branches bristly ; young branchlets with bristly green hairs and with small pale yellow scales.

Leaves : persistent only on the one-year-old shoots, oblong-elliptic, equally rounded at both ends, mucronate at the apex, 3-4 cm. long, 1·5-2·5 cm. broad, bright green, glabrous above, somewhat glaucous below and lepidote, the scales about $1\frac{1}{2}$-2 times their own diameter apart, small and uniform in size, but pale yellow and pale brown in colour, the youngest pilose-bristly on the margin, the bristles at length falling off ; stalk 4-5 mm. long, bristly and lepidote.

Inflorescence : terminal, about 5-flowered : flower-bud-scales soon falling off ; stalks about 1·5 cm. long, bristly pilose and lepidote.

Flowers : pale yellowish-green, dorsal corolla-lobe and upper part of lateral lobes mottled with dull green.

Calyx : 5-lobed, lepidote outside, lobes 2 mm. long, ovate-rounded, densely bristly-pilose on the margin.

Corolla : about 2 cm. long, tube and lobes sparingly lepidote outside.

Stamens : 10, the dorsal about half as long as the anterior ; filaments of dorsal stamens pilose nearly to the apex, the others less pilose ; anthers pale brown.

Pistil : ovary 5-celled, densely lepidote ; style curved, glabrous, green, with a darker green disk-like stigma.

Capsule :

Habitat : Tibet ; Doshong La, 10,000-11,000 ft. ; K. Ward, No. 5829 (originally described from a cultivated plant at Exbury, Hampshire).

RHODODENDRON SEMILUNATUM, *Balf. f. & Forrest.*

Illustration—

Habit : shrub 2-3 ft. high ; branchlets nearly glabrous.

Leaves : deciduous, oblong-oblanceolate, mucronate, about $\frac{3}{4}$ in. long and $\frac{1}{3}$ in. broad (young state), ciliate on the margin, rather densely scaly below ; leaf-stalks long-pilose.

Inflorescence : terminal, about 3-flowered ; flower-bud-scales early deciduous ; flower-stalks $\frac{1}{3}$ in. long, *scaly but not pilose.*

Flowers : deep yellow.

Calyx : very short, undulate, laxly scaly outside, not ciliate.

Corolla : widely tubular, $\frac{3}{4}$ in. long, slightly scaly outside the lobes.

Stamens : 10, exserted, about half of them pubescent below, the others glabrous.

Ovary : scaly ; style bent, glabrous.

Capsule :

Habitat : South-Eastern Tibet ; Salween—Kiu chiang Divide, open situations.

RHODODENDRON TRICHOCLADUM, *Franch.* Flowers greenish yellow spotted with dark green.

A. Mature leaf. B. Portion of same showing lower surface. C. Corolla laid open. D. Stamen. E. Calyx and pistil. F. Fruit. (Adapted from *Bot. Mag.*)

RHODODENDRON TRICHOCLADUM, *Franch.*

(R. XANTHINUM, *Balf. f. & W. W. Sm.*; R. BRACHYSTYLUM, *Balf. f. & Ward.*)

ILLUSTRATION—Stapf in *Bot. Mag.*, t. 9073 (1925).

HABIT: shrub about 3 ft. high; branchlets clothed with long weak hairs; leaf-bud-scales early deciduous.

LEAVES: deciduous, oblong, rounded at each end, mucronate at the apex, about $1\frac{1}{2}$ in. long and $\frac{3}{4}$ in. broad, pubescent and finely reticulate above, minutely scaly below, usually fringed with hairs, especially when young; leaf-stalks $\frac{1}{6}$ in. long, pilose.

INFLORESCENCE: terminal, 3-5-flowered; flower-bud-scales early deciduous; flower-stalks $\frac{1}{3}$ in. long, densely *pilose and scaly*.

FLOWERS: greenish-yellow, spotted with dark green.

CALYX: well developed, lobes oblong-lanceolate, densely fringed with long hairs, *scaly* on the back.

COROLLA: widely funnel-shaped, about 1 in. long, scaly outside.

STAMENS: 10, shortly exserted, pubescent in the lower part.

OVARY: *scaly*; style abruptly bent, glabrous.

CAPSULE: $\frac{1}{4}$ in. long, scaly.

HABITAT: Western Yunnan; mountains of Tali-fu, 7500-10,000 ft.; North-Eastern Burma; Chawchi Pass, 12,000-13,000 ft.

TRIFLORUM SERIES

General Characters :—Medium-sized to rather small shrubs. Leaves evergreen or very rarely partially or quite deciduous (*chartophyllum* and forms of *yunnanense*), scaly below. Flowers mostly medium-sized to rather small, *usually about 3 from a terminal bud*, but occasionally 2 or 3 axillary flowering buds also present, more or less umbellate. Calyx mostly *very small*. Corolla yellow, whitish, pink, mauve or purplish, usually spotted with red but never with a big blotch, 5-lobed ; tube glabrous or scaly outside, lobes usually more or less scaly. Stamens 10, *exserted*, the filaments usually pubescent. Ovary *usually 5-celled*, always densely scaly ; style *glabrous* or rarely with a few hairs at the base. Capsule small, 5-celled.

Distribution :—Mainly Yunnan and Szechuan, rare in the Himalayas and Japan ; absent from Eastern China.

A large group of sometimes somewhat polymorphic species, the best known of which are *R. yunnanense* and *R. Davidsonianum*. Probably derived from the *Maddenii* series, the flowers having become slightly zygomorphic, with long-exserted stamens and often spotted corollas. Some instability of characters evident in the more advanced species such as *R. yunnanense* and *R. chartophyllum*, the latter with somewhat deciduous leaves and in this character simulating, or perhaps even showing, a transition to the *Azalea* group.

J. H.

TRIFLORUM SERIES

KEY TO THE SPECIES

A. Flowers yellow, cream, or rarely greenish-white :

B. Scales on the lower surface of the leaves contiguous or nearly so at their edges, never more than their own diameter apart :

C. Inflorescence racemose, the axis becoming elongated in fruit ; flowers very small, greenish-white **afghanicum.**

C. Inflorescence short and umbelliform :

D. Leaves very obtuse at both ends, only mucronate, about 1 in. long and ½ in. broad, oblong-elliptic ; corolla-tube not scaly outside . . . . . **Wongii.**

D. Leaves very acute or acutely acuminate at the apex, 1½ in. long or more, lanceolate or ovate-lanceolate ; corolla-tube scaly outside :

E. Leaf-stalks not bristly-hairy on the margin ; Chinese and Indian species :

F. Scales on the lower surface of the leaves very small and more or less of uniform size ; inflorescence usually 3-flowered . . . . . **triflorum.**

F. Scales on the lower surface of the leaves unequal in size but of similar colour and appearance ; inflorescence 2-flowered . . . . . **bauhiniiflorum.**

F. Scales on the lower surface of the leaves of different sizes, some of the larger ones blackish ; margin of leaves more or less crenulate . . **ambiguum.**

E. Leaf-stalks with long bristly hairs on the margin ; Japanese species . . . . . **Keiskei.**

B. Scales on the lower surface of the leaves twice their own diameter apart or more :

C. Calyx very short, not more than $\frac{1}{12}$ in. long :

D. Leaf-stalks without hairs on the margin ; leaves gradually and rather long-acuminate :

Corolla-tube pubescent outside in the upper part ; W. China species . . . . . **lutescens.**

Corolla-tube scaly but not pubescent in the upper part **kasoense.**

D. Leaf-stalks with long bristly hairs on the margins ; leaves at most gradually acute ; Japanese species **Keiskei.**

C. Calyx well developed, longer than the ovary, lobes nearly ¼ in. long ; stamens all equally hairy :

Flower-bud-scales present at flowering time ; flowers racemose . . . . . **Hanceanum.**

Flower-bud-scales early deciduous ; flowers umbellate **flavantherum.**

A. Flowers never yellow, either pink, mauve, purplish or white, but never greenish-white :

B. *Midrib of the leaves softly and usually rather densely hairy on the lower surface :*

C. Leafy branchlets hairy as well as scaly :

D. Branchlets at most softly and shortly pubescent ; calyx-lobes fringed with short hairs ; leaves hairy only on the midrib . . . . . **Augustinii**

D. Branchlets densely villous-pilose with long hairs :

E. Leaves pilose only on the midrib ; corolla glabrous ; perhaps a hybrid between the preceding and following **trichophorum.**

E. Leaves pilose-setose over much of the lower surface as well as the midrib ; corolla densely villous **villosum.**

C. Leafy branchlets not hairy, only scaly ; calyx-lobes usually not fringed with hairs :

D. Leaf-scales two or more times their own diameter apart ; lateral nerves not hairy :

E. Calyx rather deeply 5-lobed ; leaves lanceolate, rather long-tapered to the apex . . **chasmanthum.**

E. Calyx a mere unlobed rim or very short cup :

F. Leaf-scales averaging 4-6 times their own diameter apart ; leaves broadly oblong, with prominent lateral nerves on both sides . . . **chasmanthoides.**

F. Leaf-scales averaging 2-3 times their own diameter apart ; leaves narrowly oblong, with obscure nerves **hirsuticostatum.**

D. Leaf-scales about their own diameter apart or less ; lateral nerves slightly pubescent as well as the midrib ; calyx very slightly lobed ; filaments of stamens glabrous **bivelatum.**

B. *Midrib of the leaves not hairy on the lower surface, often scaly :*

C. Corolla-tube scaly-glandular all over the outside :

D. Flowers whitish or pink, often spotted with red or greenish yellow :

E. Mature leaves with stiff bristly hairs on the margin ; flowers terminal and axillary ; calyx-lobes with long bristly hairs . . . . . **suberosum.**

E. Mature leaves not hairy on the margin :

F. Mature leaves greenish below between the scales, not glaucous ; pedicels longer than the corolla :

G. Leaves ovate-elliptic, rather rounded at the base ; branchlets with long-persistent perulae **bracteatum.**

G. Leaves narrowly oblong-lanceolate, narrowly obtuse at the base ; branchlets with deciduous perulae **Vilmorinianum.**

F. Mature leaves markedlp glaucous below ; peruale deciduous :

G. Leaves lanceolate, about 3 times as long as broad, gradually acute at the apex . . . **zaleucum.**
G. Leaves obovate-elliptic, scarcely twice as long as broad, abruptly acute at the apex . **erileucum.**
D. Flowers purplish, reddish-purple, or deep mauve :
E. Leaves narrowly oblong-oblanceolate, about 4 times as long as broad ; scales very dense below, flaky and overlapping, with darker coloured larger ones dotted here and there . . . . . **polylepis.**
E. Leaves more or less elliptic or ovate-elliptic, about twice as long as broad, the scales laxer below, hardly overlapping :
F. Leaf-stalks with densely bristly margins ; scales about their own diameter apart, blackish . . **Amesiae.**
F. Leaf-stalks not bristly on the margins :
G. Leaves rather small, about 1½ in. long and ¾ in. broad, rather glaucous below :
H. Flowers not white towards the base ; calyx not fringed with hairs . . . **concinnum.**
H. Flowers white towards the base ; calyx often fringed with hairs . . . . **concinnoides.**
G. Leaves fairly large, averaging 2½-3 in. long and 1-1¼ in. broad ; flowers dark-purple **pseudoyanthinum.**
C. Corolla-*tube* not scaly outside or only sometimes with a few scales down *one side only* :
D. Leaves distinctly cordate at the base :
E. Scales on the lower surface of the leaves considerably more than their own diameter apart ; leaves acutely triangular-apiculate . . . **apiculatum.**
E. Scales on the lower surface of the leaves scarcely more than half their own diameter apart ; leaves rounded to an obtuse mucro, sometimes almost emarginate **artosquameum.**
D. Leaves sometimes rounded but hardly cordate at the base :
E. Leaves with bristly hairs on the upper surface or on the margin, these usually persisting for a season or more ; scales on the lower surface usually very wide apart, 1½ times their own diameter or more :
F. Leaves completely deciduous, appearing with or just after flowering ; bristles confined to the margins of the leaves ; flowers 1 in. or more long, stalks ¼-⅓ in. long . . . . . **hormophorum.**
F. Leaves evergreen or only partially deciduous :
G. Flower-stalks very short, about ⅙ in. long ; flowers very small, about ¾ in. long ; bristles confined to the margins of the leaves . . . **rigidum.**
G. Flower-stalks ½ in. long or more ; flowers 1 in. long or more ; bristles over the upper surface of the leaves . . . . . **yunnanense.**

E. Leaves without bristly hairs on the upper surface or on the margin, except sometimes on the margin when quite young but then soon falling off :

F. Scales dense on the lower surface of the leaves, scarcely more than twice their own diameter apart :

G. Calyx well developed, unequally 5-lobed, the back and front lobes sometimes much longer than the others (about $\frac{1}{6}$ in.) and fringed with long hairs, all densely scaly outside . . . . . **Searsiae.**

G. Calyx more or less obsolete, at most shortly and more or less equally lobed :

H. Flower-stalks very short, about $\frac{1}{12}$ in. long ; corolla small, not quite $\frac{1}{2}$ in. long . . **tatsienense.**

H. Flower-stalks $\frac{1}{4}$ in. long or more ; corolla longer than above :

I. Style hairy towards the base ; inflorescence 9-10-flowered ; capsule very short, $\frac{1}{4}$ in. long **charianthum.**

I. Style glabrous its full length ; each inflorescence up to 6-flowered :

J. Some of the stamens shortly pubescent, the others glabrous :

K. Scales on the lower surface of the leaves about 1-1$\frac{1}{2}$ times their own diameter apart **siderophyllum.**

K. Scales on the lower surface of the leaves more or less contiguous . . . **hypophaeum.**

J. All the stamens more or less equally pubescent in the lower part :

K. Leaves more or less equally densely scaly on *both* surfaces :

L. Petioles without bristles on the margins ; scales of leaves brown . . . **stereophyllum.**

L. Petioles with long bristly hairs on the margins ; scales blackish . . . . **Amesiae.**

K. Leaves much more densely scaly below than above, sometimes the latter not or only slightly scaly :

L. Leaves obovate-elliptic, with fairly well-marked and prominent lateral nerves ; flower-stalks about $\frac{1}{4}$ in. long . . . **leilungense.**

L. Leaves lanceolate, oblanceolate or more or less elliptic ; flower-stalks $\frac{1}{2}$ in. long or more :

M. Leaves narrowly lanceolate to oblanceolate, about 3-4 times as long as broad, acute at both ends :

N. Leaf-blade forming a distinct V with the midrib, mostly scaly glandular on the upper surface . . . . **Davidsonianum.**

N. Leaf-blade recurved from the midrib, glabrous or nearly so on the upper surface **lochmium.**

M. Leaves more or less oblong or elliptic, rather rounded at each end :

N. Scales very dense, about ½ their own diameter apart . . . . **oreotrephes.**

N. Scales laxer, about twice their own diameter apart . . . . . **timeteum.**

F. Scales very lax on the lower surface of the leaves, about 3 or more times their own diameter apart :

G. Leaves markedly acuminate :

Leaves persistent, elliptic-lanceolate **Bodinieri.**

Leaves deciduous or almost completely deciduous **chartophyllum.**

G. Leaves not long-acuminate, at most sometimes gradually acute :

H. Leaves obovate or elliptic ; flower-stalks not scaly :

Corolla ¾ in. long ; calyx not scaly outside **eriandrum.**

Corolla 1-1½ in. long ; calyx scaly outside and on the margin . . . . **sycnanthum.**

H. Leaves more or less oblanceolate ; flower-stalks more or less scaly :

I. Calyx well developed, deeply 5-lobed ; corolla very small, ¾ in. long or less . . **longistylum.**

I. Calyx very small, little more than a rim :

J. Corolla rose-lavender, deepest at the base, with olive-brown markings ; scales on the lower surface of the leaves very few ; calyx slightly scaly outside, fringed only with very minute hairs **hesperium.**

J. Corolla pale rose-lavender, heavily blotched and spotted deep crimson ; scales on the lower surface of the leaves rather numerous ; calyx scaly outside and fringed with scales . **pleistanthum.**

J. Corolla probably rose ; scales on the lower surface of the leaves fairly numerous ; calyx not scaly and not hairy outside ; leaves very narrowly oblanceolate . . . **aechmophyllum.**

SUBSERIES AUGUSTINII

RHODODENDRON AUGUSTINII, *Hemsl.*

ILLUSTRATION—Craib in *Bot. Mag.*, t. 8497 (1913); *Gard. Chron.* 52, p. 4 (1912).

HABIT: shrub with rather "leggy" branches; leafy part of branchlets softly pubescent and glandular-scaly.

LEAVES: lanceolate or broadly oblanceolate, *acutely acuminate*, obtusely mucronate, *narrowed to the base*, 1½-3 in. long, ½-1 in. broad, at first thinly and softly pubescent above, soon glabrous, *fairly long- and softly pubescent on the lower ⅓-½ of the midrib below*, rather densely glandular-scaly below, the scales *scarcely their own diameter apart in wild specimens*, becoming laxer under cultivation; *leaf-stalks softly pubescent*, ¼ in. long.

INFLORESCENCE: usually 3-flowered, terminal, umbellate.

RHODODENDRON AUGUSTINII, *Hemsl.* Flowers mauve to lilac-purple. A. Typical leaf. B. Lower surface of leaf. C. Flower. D. Stamens. E. Calyx and pistil.

FLOWERS: mauve or lilac-purple, with yellowish-green spots; stalks ½ in. long, scaly.

CALYX: very short, with rounded ciliate lobes, densely scaly outside.

COROLLA: 5-lobed, 1½-2 in. long, *laxly scaly all over the outside.*

STAMENS: 10, very unequal, *long-exserted*, pilose in the lower part.

OVARY: 5-celled, *scaly and pubescent*; style long and slender, glabrous.

CAPSULE: oblique at base, ½-⅔ in. long, densely covered with small glandular scales.

HABITAT: Western Hupeh and Szechuan; common in rocky situations exposed to the sun, up to 9300 ft.

RHODODENDRON BIVELATUM, *Balf. f.*

Illustration—

Habit : shrub with evergreen leaves ; leafy branchlets very short, densely scaly.

Leaves : *obovate-oblanceolate*, obtuse at the apex, gradually narrowed to the base, $1\frac{1}{4}$-$1\frac{1}{2}$ in. long, $\frac{1}{2}$-$\frac{3}{4}$ in. broad, pubescent on the midrib but otherwise glabrous above, *shortly pubescent on the midrib and on the very prominent lateral nerves below*, scales about their own diameter apart or less, subequal-sized ; leaf-stalks $\frac{1}{3}$ in. long, scaly.

Inflorescence : terminal, 2-3-flowered, *the bracts persisting up to flowering time* ; flower-stalks $\frac{1}{3}$ in. long or less, shortly pubescent as well as scaly.

Flowers : rose, small.

Calyx : shortly lobed, small, scaly outside the base.

Corolla : 5-lobed, scarcely 1 in. long, *the tube not scaly outside.*

Stamens : 10, shortly exserted, *glabrous.*

Ovary : 5-celled, densely scaly ; style glabrous.

Habitat : North-East Yunnan : dry hills near Mo-tsou, 2700 ft. ; dry mountains near Siao-ou-long, 8000 ft.

RHODODENDRON CHASMANTHOIDES, *Balf. f. & Forrest.*

Illustration—*Gard. Chron.* 80, p. 209 (1926).

This species is very similar in general appearance to *R. chasmanthum* (q.v.) but the leaves are more oblong, triangular at the apex, with the same pubescent midrib below, the scales laxer below, however, the lateral nerves rather faint and slender below; *calyx a mere rim*, not lobed, densely scaly outside; *corolla-tube not scaly*, or only very sparingly so on one side; some of the stamens nearly *glabrous*, the others pubescent towards the base.

Flowers: rose-lavender with olive-green markings.

Habitat: South-Eastern Tibet; Doker-La, Tsarong, Mekong—Salween Divide, 28° 25′ N., in open thickets and pine forests, 10,000-11,000 ft. North-West Yunnan; mountains above Tseku and Tsehchung, and mountains of Londjre.

Very like *R. yunnanense* in its flowers, which are similarly spotted, but determined at once by the hairy midrib below.

RHODODENDRON CHASMANTHUM, *Diels.*

Illustration—

Habit: shrub 3-5 ft. high; branchlets laxly scaly.

Leaves: lanceolate, *tapered to the apex,* a little narrowed to the base, 2½-4 in. long, ¾-1½ in. broad, *softly pubescent on the midrib below,* glabrous above, very laxly scaly below, the scales about 4-5 times their own diameter apart and quite small; *lateral nerves numerous, distinct*; leaf-stalks ⅓ in. long.

Inflorescence: terminal, 3-4-flowered, subumbellate; flower-stalks 1 in. long, laxly scaly.

Flowers: pale lavender-rose with olive markings.

Calyx: rather unequally and deeply 5-lobed, *scaly outside,* about ⅛ in. long, *sometimes one lobe much longer.*

Corolla: 1½ in. long, 5-lobed, *laxly scaly down one side.*

Stamens: 10, far exserted, pubescent in the lower quarter.

Ovary: 5-celled, densely scaly; style exceeding the stamens, glabrous.

Capsule: ¾ in. long, very oblique at the base, laxly covered with small whitish scales; calyx persistent at the base.

Habitat: North-West Yunnan and South-Eastern Tibet: 10,000 ft.; open situations in side valleys.

RHODODENDRON HIRSUTICOSTATUM, *Hand.-Mazz.*

Illustration—

Habit : shrub with straight "leggy" branches and semi-deciduous leaves.

Leaves : narrowly oblong, gradually narrowed to an obtuse apex, obtuse at the base, $1\frac{1}{2}$-2 in. long, $\frac{1}{2}$-$\frac{3}{4}$ in. broad, *softly pubescent on the lower half of the midrib below*, the scales about $2\frac{1}{2}$-$3\frac{1}{2}$ times their own diameter apart ; leaf-stalks $\frac{1}{4}$ in. long, minutely hairy and scaly.

Inflorescence : *terminal and axillary*, each about 2-flowered ; flower-stalks $\frac{1}{3}$ in. long, loosely scaly.

Flowers : whitish-rose, apparently not spotted.

Calyx : shortly cupular, scarcely lobed, densely scaly outside.

Corolla : 5-lobed, about $1\frac{1}{4}$ in. long ; tube *not scaly outside*, lobes very slightly so.

Stamens : 10, exserted, slightly pubescent towards the base.

Ovary : 5-celled, densely scaly ; style *slightly pubescent near the base.*

Habitat : South-Western Szechuan ; Ningyüen region, 6500-8000 ft.

Very closely allied to *R. yunnanense*, but with a hairy midrib and the corolla apparently not spotted.

RHODODENDRON TRICHOPHORUM, *Balf. f.*

I suspect this to be a hybrid of *R. Augustinii* and *R. villosum*. It seems to possess some of the characters of both these species. It has the glabrous corolla and the same type of hairs on the midrib of the leaves as the former, but it has the long-pilose branches of the latter. A direct cross between these two species would probably determine the true status of *R. trichophorum*.

Professor Bayley Balfour founded the species on Wilson's no. 4242, from Mupin, Szechuan, in which province both species mentioned are common.

RHODODENDRON VILLOSUM, *Hemsl. & E. H. Wils.*

Illustration—

Habit : shrub 5 ft. high or up to 20 ft. (Wilson) ; *younger shoots densely bristly with long hairs* and dotted with scales.

Leaves : oblong-oblanceolate, *rounded or slightly cordate at the base, acutely triangular-acuminate,* mucronate, 2-4 in. long, $\frac{3}{4}$-$1\frac{1}{3}$ in. broad, at first setose on the upper surface, soon becoming only minutely scaly, rather laxly scaly below, the scales about 3-4 times their own diameter apart, and *setose-pubescent especially on the midrib* ; leaf-stalks *densely setose.*

Inflorescence : 3-flowered, umbellate, terminal ; flower-stalks $\frac{1}{2}$ in. long, *densely setose with bristly hairs.*

Flowers : light purple or rose.

Calyx : 5-lobed, lobes broadly rounded, $\frac{1}{16}$ in. long, *densely fringed with long slender hairs and bristly outside.*

Corolla : 5-lobed ; tube with scattered scales all over the outside and more or less *densely bristly in the lower part.*

Stamens : 10, long-exserted, villous in the lower part.

Ovary : 5-celled, covered with *long bristles and small scales* ; style quite smooth.

Capsule : $\frac{3}{4}$ in. long, curved, laxly covered with small scales, girt at the base by the persistent ciliate calyx-lobes.

Habitat : Western Szechuan, 7000-11,000 ft.

SUBSERIES HANCEANUM

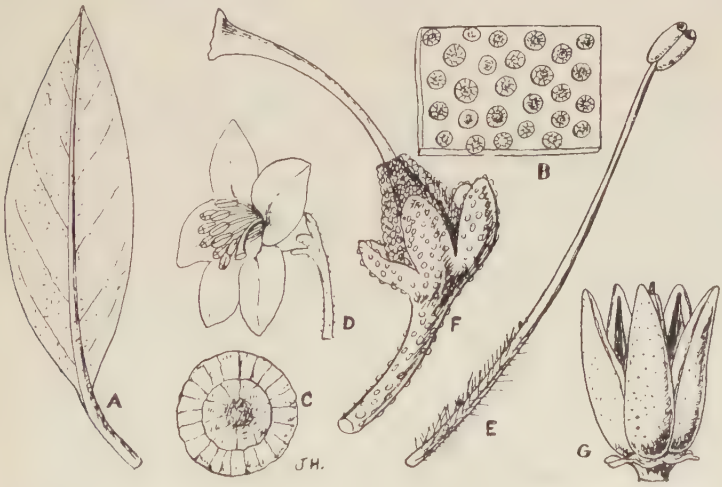
RHODODENDRON AFGHANICUM, *Aitch. & Hemsl.*

ILLUSTRATION—Aitchison in *Journ. Linn. Soc.* 19, t. 21 (1882).

HABIT : a poisonous shrub, creeping on rocks ; leafy branchlets loosely scaly.

LEAVES : lanceolate or oblong-lanceolate, rather gradually narrowed to an obtuse mucro at the apex, *decurrent on the stalk at the base*, 1½-2½ in. long, ½-¾ in. broad, light green, glabrous above, scaly beneath, the *scales subcontiguous* or up to nearly their own diameter apart ; leaf-stalks slightly scaly.

INFLORESCENCE : *racemose*, 8-15-flowered ; flower-stalks scaly, about ⅓ in. long.



RHODODENDRON AFGHANICUM, *Aitch. & Hemsl.* Flowers whitish green.
A. Typical leaf. B. Scales on lower surface. C. Enlarged scale. D. Flower. E. Stamen. F. Calyx and pistil. G. Capsule.

FLOWERS : whitish green, small.

CALYX : *deeply 5-lobed*, lobes broad, *unequal*, up to ⅙ in. long, scaly outside and on the margin.

COROLLA : 5-lobed, scarcely ½ in. long, campanulate ; *tube not scaly outside.*

STAMENS : 10, exserted, villous below the middle.

OVARY : 5-celled, scaly ; style glabrous, *curved*, with a large lobulate stigma.

CAPSULE : about ⅓ in. long, at length loosely scaly.

HABITAT : Afghanistan ; Kurrum Valley ; abundant from 7000-9000 ft., at Shendtoi and Kaiwas.

RHODODENDRON HANCEANUM, *Hemsl.*

ILLUSTRATION—Hutchinson in *Bot. Mag.*, t. 8669 (1916).

HABIT: shrub up to 3 ft. high; branchlets scaly.

LEAVES: *ovate-lanceolate to obovate, acutely acuminate,* rounded or obtuse at the base, $1\frac{3}{4}$-3 in. long, $\frac{2}{3}$-$1\frac{1}{2}$ in. broad, leathery, finely scaly below, the scales very small and *twice their own diameter apart or more*; lateral nerves 8-9 on each side, looped; leaf-stalks about $\frac{1}{4}$ in. long.

INFLORESCENCE: terminal, *distinctly racemose,* with the very *acuminate bud-scales present at flowering time*; flower-stalks very laxly scaly.

FLOWERS: pale yellow, small.

CALYX; *very well developed,* longer than the ovary, 5-lobed to the base, *lobes nearly* $\frac{1}{4}$ *in. long, oblong,* usually with a few hairs on the margin, glabrous outside or with a few scales.

COROLLA: 5-lobed, *not scaly outside,* $\frac{3}{4}$-1 in. long.

STAMENS: 10, exserted, pilose in the lower part.

OVARY: 5-celled, densely scaly; style glabrous.

CAPSULE: very short, $\frac{1}{3}$ in. long, *enclosed by the persistent calyx-lobes.*

HABITAT: Western Szechuan, 7000-9000 ft.

SUBSERIES OREOTREPHES

RHODODENDRON APICULATUM, *Rehd. & E. H. Wils.*

ILLUSTRATION—

HABIT : shrub about 5 ft. high ; branchlets very short, sparingly scaly.

LEAVES : broadly elliptic, *rounded-cordate at the base*, acutely triangular-apiculate at the apex, $1\frac{1}{2}$-$1\frac{3}{4}$ in. long, 1 in. broad, glabrous and nervose above, scaly below, the scales $1\frac{1}{2}$-2 times their own diameter apart, equal-sized, fleshy in the middle ; leaf-stalks $\frac{1}{3}$ in. long, loosely scaly.

INFLORESCENCE : terminal, about 3-flowered ; flower-stalks $\frac{1}{3}$ in. long, slightly scaly near the apex.

FLOWERS : dark purple.

CALYX : very small, shortly lobed, fringed with scales.

COROLLA : 5-lobed, about $1\frac{1}{4}$ in. long ; tube not scaly outside.

STAMENS : 10, slightly pubescent in the lower part.

OVARY : 5-celled, densely scaly ; style glabrous.

HABITAT : Western Szechuan, 7800-9400 ft.

RHODODENDRON ARTOSQUAMEUM, *Balf. f. & Forrest.*

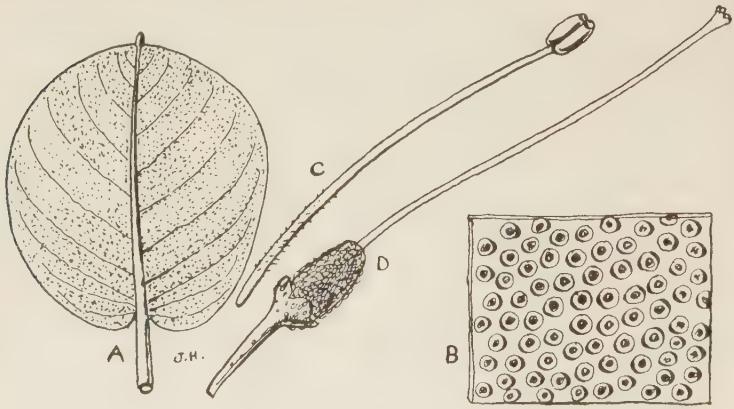
(Syns. R. CARDIOEIDES, *Balf. f. & Forrest*; R. PUBIGERUM, *Balf. f. & Forrest*; R. TRICHOPODUM, *Balf. f. & Forrest.*)

ILLUSTRATION—

HABIT: shrub 2-8 ft. high; annual branchlets very short, laxly scaly.

LEAVES: *broadly ovate or almost rounded, deeply cordate* at the base, rounded to an obtuse mucro at the apex, $1\frac{1}{4}$-$1\frac{3}{4}$ in. long, $\frac{3}{4}$-$1\frac{1}{4}$ in. broad, not scaly above, *rather densely so below*, the scales about $\frac{1}{2}$-$\frac{3}{4}$ their own diameter apart, equal-sized and rather fleshy; lateral nerves scarcely visible; leaf-stalks $\frac{1}{3}$-$\frac{1}{2}$ in. long, slightly scaly.

INFLORESCENCE: terminal, 3-4-flowered, umbellate; flower-stalks $\frac{1}{2}$ in. long, very slightly scaly.



RHODODENDRON ARTOSQUAMEUM. *Balf. f. & Forrest.* Flowers rose. A. Leaf. B. Under surface of leaf showing scales. C. Stamen. D. Pistil.

FLOWERS: rose, without markings.

CALYX: very small, undulate, scaly outside.

COROLLA: 5-lobed, $1\frac{1}{4}$ in. long, *quite glabrous outside.*

STAMENS: 10, as long as corolla, shortly pubescent in the lower part; anthers very short.

OVARY: 5-celled, densely scaly; *style glabrous*, stigma deeply lobulate.

HABITAT: South-Eastern Tibet: Tsarong, 11,000-12,000 ft.

RHODODENDRON EXQUISETUM, *Hutchinson* in *Gard. Chron.*, xcii. (1932), 98.

Illustration—*Bot. Mag.*, t. 9597.

Habit : shrub 3-4 ft. high ; one-year-old branchlets elongated, tinged with purple, with a few scales here and there ; leaf-bud-scales densely lepidote and minutely ciliolate ; young shoots plum-purple.

Leaves : evergreen, scattered, broadly elliptic, widely rounded at the base, rounded to a very obtuse mucro at the apex, 5-6 cm. long, 3-3·5 cm. broad, dark green and glabrous on the upper surface, glaucous-green below and lepidote, the scales small and uniform and about 2-3 times their own diameter apart, pinkish ; stalks 0·8-1 cm. long, grooved on the upper side.

Inflorescence : 8-10 flowers in a loose terminal cluster ; axis very short, glabrous ; flower-bud-scales soon falling off, densely lepidote outside ; stalks about 3 cm. long, glabrous.

Flowers : exquisite pink, unspotted.

Calyx : very small, closely scaly on the margin.

Corolla : widely funnel-shaped, 5-lobed, without scales on the outside, tube about 2 cm. long, limb about 7 cm. diameter; lobes oblong-elliptic, about 2·5 cm. long.

Stamens : 10, exserted, the longest about as long as the style ; filaments shortly pubescent towards the base ; anthers yellowish-brown.

Pistil : ovary 5-celled, broadly oblong, densely lepidote ; style 3·5 cm. long, glabrous.

Capsule :

Habitat : South-West Szechuan ; mountains east of Yung-ning, 10,000-11,000 ft.; originally described from a specimen grown and flowered at the end of May 1932 at Exbury, Hampshire, from Forrest's seed, No. 20489.

RHODODENDRON BRACTEATUM, *Rehd. & Wils.*

ILLUSTRATION—Stapf, *Bot. Mag.*, t. 9031 (1924).

HABIT : shrub about 6 ft. high ; branchlets twiggy, not scaly.

LEAVES : *ovate-elliptic*, obtusely mucronate, rounded at the base, 1½-2 in. long, ¾-1 in. broad, laxly scaly above, rather densely so below, the scales *1-2 times their own diameter apart* and subequal ; leaf-stalks ¼ in. long, sparingly scaly.

INFLORESCENCE : terminal, 3-4-flowered, umbellate ; flower-stalks slender, ¾ in. long, with a few scattered scales.

FLOWERS : white, spotted with red.

CALYX : about $\frac{1}{12}$ in. long, with broad rounded lobes, fringed with scales and a few scales outside.

COROLLA : ¾ in. long, campanulate, 5-lobed, *laxly scaly all over the outside* ; tube softly pubescent within.

STAMENS : 10, pubescent in the lower half.

OVARY : 5-celled, densely scaly ; *style with a few hairs near the base.*

CAPSULE : small, ½ in. long, laxly scaly.

HABITAT : Western Szechuan ; 7000-10,000 ft., on cliffs.

RHODODENDRON OREOTREPHES, *W. W. Smith.*

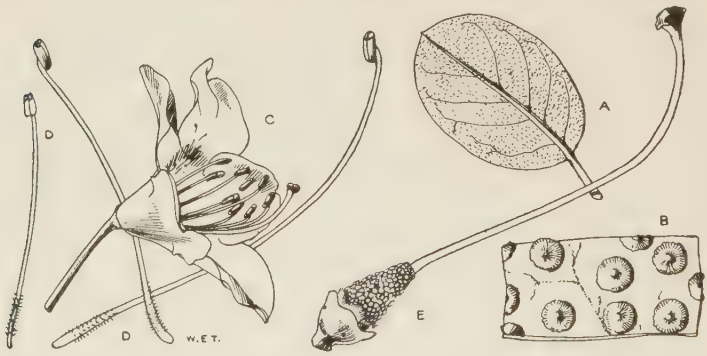
(R. DEPILE, *Balf. f. & Forrest*; R. HYPOTRICHOTUM, *Balf. f. & Forrest*; R. OREOTREPHOIDES, *Balf. f.*, name only; R. PHAEOCHLORUM, *Balf. f. & Forrest.*)

ILLUSTRATION—Hutchinson in *Bot. Mag*, t. 8784 (1918). See figure below.

HABIT: shrub up to about 7 ft. high; branchlets slightly scaly or nearly glabrous, reddish.

LEAVES: oblong or oblong-elliptic, almost equally *rounded-obtuse at both ends*, 1½-2½ in. long, ¾-1 in. broad, hardly scaly above, often *glaucous below and densely scaly, the scales numerous, about equal in size and from contiguous to ¾ their own diameter apart*; leaf-stalks rather long (about ⅓-½ in.).

INFLORESCENCE: terminal, about 5-8-flowered, shortly racemose; flower-stalks ½-¾ in. long, glabrous or slightly scaly.



RHODODENDRON OREOTREPHES, *W. W. Smith.* Flowers mauve or mauve-pink.
A. Typical leaf. B. Lower surface of leaf, showing scales C. Flower. D. Stamens. E. Pistil and calyx.

FLOWERS: mauve or mauve-pink, often with darker spots.

CALYX: very short, *undulate and rim-like*, scaly outside.

COROLLA: about 1¼ in. long, 5-lobed; *tube not scaly outside.*

STAMENS: 10, pubescent in the lower part, shortly exserted.

OVARY: 5-celled, closely scaly; style glabrous.

CAPSULE: nearly ½ in. long, laxly scaly.,

HABITAT: Yunnan and South-Eastern Tibet, 10,000-12,000 ft.

RHODODENDRON SYCNANTHUM, *Balf. f. & W. W. Smith.*

Illustration—

Habit : shrub 3-9 ft., very twiggy ; branches stiff, with very short annual growths *not at all scaly.*

Leaves : small, obovate, shortly mucronate, 1-1¼ in. long, ½-¾ in. broad, leathery, glabrous above, very laxly scaly below, *the scales about 4-6 times their own diameter apart*, impressed ; leaf-stalks ¼ in. long, slightly scaly.

Inflorescence : 2-3-flowered, terminal ; flower-stalks ⅓ in. long, *not scaly.*

Flowers : deep rose-lavender with olive-brown markings.

Calyx : a mere rim with a *few small scales only on the margin.*

Corolla : 5-lobed, *scarcely 1 in. long, not scaly outside.*

Stamens : 10, scarcely as long as the corolla, *only some of them* slightly pubescent towards the base.

Ovary : 5-celled, scaly ; style smooth, much longer than the stamens.

Habitat : North and Mid-Western Yunnan ; Tali Shan, 9000-10,000 ft. ; cliffs and rocky slopes in side valleys. Eastern flank of Tali Range, 10,000-11,000 ft. ; amongst scrub and on ledges of cliffs.

RHODODENDRON TIMETEUM, *Balf. f. & Forrest.*

ILLUSTRATION—

With the general characters and habit of *R. oreotrephes*, but the leaves probably much less glaucous below, and particularly by the much fewer and laxer scales below, the scales being about twice their own diameter apart. Flowers 3-4 in each truss, " purplish-rose with a few dark markings."

HABITAT : South-Western Szechuan ; Mu-li Mts., 11,000 ft. ; in and on margins of pine forests.

SUBSERIES POLYLEPIS

RHODODENDRON AMESIAE, *Rehd. & E. H. Wils.*

Illustration—

Habit : small shrub ; branchlets closely scaly.

Leaves : *ovate-elliptic*, bluntly mucronate at the apex, *rounded at the base*, 1-1½ in. long, ⅖-⅕ in. broad, rather densely scaly and reticulate above, densely scaly below, the scales *about their own diameter apart, blackish* ; leaf-stalks ¼ in. long, scaly, *bristly with hairs on the margin.*

Inflorescence : 2-3-flowered, terminal ; flower-stalks ½ in. long, scaly.

Flowers : purple.

Calyx : very short, densely scaly outside.

Corolla : 5-lobed ; tube not scaly outside or only slightly and loosely so.

Stamens : 10, exserted, pubescent in the lower part.

Ovary : densely scaly, 5-celled ; style glabrous.

Capsule : not seen.

Habitat : Western Szechuan ; Mupin woods, 7000-9300 ft.

RHODODENDRON CONCINNOIDES, *Hutch. & Ward, n. sp.*

Illustration—

Habit : a small shrub ; branchlets rather densely scaly.

Leaves : in clusters, obovate-elliptic, triangular-acuminate, bluntly mucronate, broadly wedge-shaped at the base, 1-1¾ in. long, ½ to nearly 1 in. broad, densely covered with rich brown scales below, scales about half their own diameter apart ; leaf-stalks ⅙ in. long, densely scaly.

Inflorescence : terminal, 3-flowered ; flower-bud-scales soon falling off ; flower-stalks ⅓ in. long, densely scaly.

Flowers : pinkish purple on the lobes with darker spotting inside, fading to white at the base (*Ward*).

Calyx : small, with small rounded scaly lobes, sometimes fringed with hairs.

Corolla : broadly tubular-campanulate, about 1 in. long, rather densely scaly outside.

Stamens : 10, the longest slightly exserted, pilose towards the base.

Ovary : 5-celled, scaly ; style glabrous, slender, much longer than the stamens.

Capsule : ¾ in. long, densely scaly.

Habitat : Assam ; Delei Valley, 8000-11,000 ft., *Ward* 8578 (type) ; *Ward* 8168 ; 8227.

RHODODENDRON CONCINNUM, *Hemsl.*

(R. YANTHINUM, *Bur. & Franch.*; R. BENTHAMIANUM, *Hemsl.*; R. COOMBENSE, *Hemsl.*; R. IOANTHUM, *Balf. f.*; R. LAETEVIRENS, *Balf. f.*, name only.)

ILLUSTRATION—Hemsl. in *Bot. Mag.*, t. 8280 (1909).

HABIT: shrub; branchlets twiggy, densely scaly.

LEAVES: oblong-lanceolate, mucronate, subacute at each end, $1\frac{1}{4}$-$1\frac{3}{4}$ in. long, $\frac{1}{3}$-$\frac{3}{4}$ in. broad, scaly on both surfaces, the scales below *about* $\frac{1}{4}$-$\frac{1}{2}$ *their own diameter apart*; leaf-stalks $\frac{1}{6}$ in. long, densely scaly.

INFLORESCENCE: 3-flowered, terminal; flower-stalks $\frac{1}{2}$ in. long, scaly.

FLOWERS: purplish, spotted.

CALYX: very small, scarcely lobed, densely scaly outside.

COROLLA: *densely scaly outside*, 5-lobed.

STAMENS: 10, densely villous in the lower part.

OVARY: 5-celled, densely scaly; style glabrous.

CAPSULE: $\frac{1}{2}$ in. long, densely scaly.

HABITAT: Szechuan; type from summit of Mt. Omi.

RHODODENDRON POLYLEPIS, *Franch.*

(R. HARROVIANUM, *Hemsl.*)

ILLUSTRATION—*Rev. Hort.* **1914**, p. 324.

HABIT: shrub up to 12 ft. high; branchlets rather densely covered with flaky scales.

LEAVES: *oblanceolate or oblong-oblanceolate, acute at both ends,* 2-4 in. long, $\frac{3}{4}$-$1\frac{1}{4}$ in. broad, *glabrous* and dull above, very densely covered below with *overlapping dry flaky brown scales,* with several *distinct lateral nerves*; leaf-stalks $\frac{1}{4}$ in. long, densely scaly.

INFLORESCENCE: terminal, 3-5-flowered, umbellate; flower-stalks $\frac{1}{3}$-$\frac{1}{2}$ in. long, densely scaly.

FLOWERS: *dark purple.*

CALYX: short, shallowly lobed, very densely scaly outside.

COROLLA: about $1\frac{1}{2}$ in. long, 5-lobed, *rather densely scaly all over the outside.*

STAMENS: 10, long-exserted, softly hairy in the lower part.

OVARY: 5-celled, densely covered with reddish-brown scales; *style very minutely pubescent at the base* or glabrous.

CAPSULE: $\frac{1}{3}$ in. long, densely scaly.

HABITAT: Western Szechuan and North Yunnan; very common from 7500-9000 ft.

RHODODENDRON PSEUDOYANTHINUM, *Balf. f.*

(R. YANTHINUM *var.* LEPIDANTHUM, *Rehd. & E. H. Wils.*)

ILLUSTRATION—Hutchinson in *Bot. Mag.*, t. 8620 (as R. CONCINNUM) (1915).

Probably a distinct enough species, which has been confused with *R. concinnum*, Hemsl. (q.v.). Leaves considerably larger than that species, and a more showy garden plant. The flowers are decidedly larger and darker than in *R. concinnum*.

HABITAT: Western Szechuan, 7500-12,000 ft.

SUBSERIES TRIFLORUM

RHODODENDRON AMBIGUUM, *Hemsl.*

ILLUSTRATION—Hemsl. in *Bot. Mag.*, t. 8400 (1911).

HABIT: shrub up to about 5 ft. high; branchlets slender but stiff, rather densely glandular-scaly.

LEAVES: *ovate-lanceolate, acutely acuminate,* conspicuously obtusely *mucronate,* rounded at base, 2-3 in. long, $\frac{3}{4}$-$1\frac{1}{4}$ in. broad, glabrous above, *densely scaly* with different sized scales below, some of them blackish, *never quite as much as their own diameter apart*; leaf-stalks $\frac{1}{4}$ in. long, laxly scaly.

INFLORESCENCE: terminal, shortly racemose, 3-4-flowered; flower-stalks $\frac{1}{2}$ in. long, scaly.

FLOWERS: *yellow spotted with green.*

CALYX: small, undulate, scarcely $\frac{1}{12}$ in. long, scaly outside.

COROLLA: $1\frac{1}{4}$-$1\frac{1}{2}$ in. long, 5-lobed, *laxly scaly all over the outside,* slightly pubescent within the tube.

STAMENS: 10, unequal length, exserted, pilose in lower $\frac{1}{2}$-$\frac{2}{3}$.

OVARY: 5-celled, densely scaly; *style glabrous.*

CAPSULE: $\frac{1}{3}$ in. long, rather densely scaly.

HABITAT: Western Szechuan, up to 11,000 ft.

RHODODENDRON BAUHINIIFLORUM, *Watt, ms.*

This is known only from specimens collected by Watt. It approaches *R. triflorum* Hook. f. so closely that I doubt whether they are really distinguishable (see key). I cannot decide this point, however, on the material available, and so I should hardly be justified in reducing Watt's species. Moreover, it is found in the mountains of Manipur, Assam, where true *R. triflorum* (from the Sikkim Himalaya) has so far not been collected. There are several interesting Rhododendrons in these mountains, and their further exploration would probably yield interesting results.

HABITAT: Manipur, Assam; Japoo Ching Sow and Keyang, 8000-10,000 ft., flowering there in March.

RHODODENDRON FLAVANTHERUM, *Hutch. & Ward, n. sp.*

Illustration—

Habit : shrub 6-10 ft. ; branchlets very sparingly scaly.

Leaves : oblong-elliptic, subtriangular and obtusely mucronate at the apex, rounded at the base, $1\frac{1}{4}$-$1\frac{3}{4}$ in. long, $\frac{1}{2}$-$\frac{3}{4}$ in. broad, glaucous below, loosely clothed with various sized scales below, the scales 2-3 times their own diameter apart ; leaf-stalks $\frac{1}{3}$ in. long, with few impressed scales.

Inflorescence : terminal, 3-flowered ; flower-stalks $\frac{1}{3}$ in. long, densely scaly ; flower-bud-scales early deciduous.

Flowers : bright clear yellow, with deep orange anthers.

Calyx : large, deeply lobed, lobes broadly rounded, $\frac{1}{6}$ in. long, loosely scaly outside.

Corolla : broadly tubular, $\frac{3}{4}$ in. long, loosely scaly all over the outside.

Stamens : 10, exserted, pilose in the lower part.

Ovary : 5-celled, scaly ; style longer than the stamens, scaly in the lower half.

Capsule : $\frac{1}{2}$ in. long, densely glandular-scaly.

Habitat : Tibet ; Tsangpo Gorge, near Churung Confluence, 8000-9000 ft., on vertical cliffs, *Ward* 6313 (type).

RHODODENDRON KASOENSE, *Hutch. & Ward.*

ILLUSTRATION—

HABIT: a lanky shrub, or compact when fully exposed; branchlets sparsely scaly.

LEAVES: oblong-lanceolate, acutely acuminate, $1\frac{1}{2}$-$2\frac{1}{2}$ in. long, $\frac{1}{2}$-$\frac{3}{4}$ in. broad, sparingly scaly on both surfaces, the scales below about 2-3 times their own diameter apart; leaf-stalks $\frac{1}{4}$-$\frac{1}{3}$ in. long, laxly scaly.

INFLORESCENCE: terminal, 3-flowered; flower-stalks about $\frac{1}{6}$ in. long, densely scaly; flower-bud-scales early deciduous.

FLOWERS: yellow, with red anthers.

CALYX: very small and rim-like, scaly outside.

COROLLA: tubular-campanulate, $\frac{2}{3}$ in. long, loosely scaly all over the outside.

STAMENS: 10, unequal, exserted, densely villous in the lower half or third.

OVARY: 5-celled, densely glandular-scaly; style longer than the stamens, glabrous.

CAPSULE: $\frac{3}{4}$ in. long, nearly straight, rather densely covered with golden-brown glands.

HABITAT: Assam; Delei Valley; Kaso Peak, 7000-8000 ft., *Ward* 8522 (type); *Ward* 8700.

RHODODENDRON KEISKEI, *Miq.*

ILLUSTRATIONS—Maxim. in *Mém. Acad. Imp. Sc. St. Petersb.*, ser. vii. 16, t. 4, f. 11-17 (1870); Hemsl. in *Bot. Mag.*, t. 8300 (excl. descr. of habit) (1910).

HABIT: *a low compact shrub*; branchlets laxly scaly when young.

LEAVES: lanceolate to oblong-lanceolate, rounded at the base, gradually narrowed to a blunt mucronate apex but hardly acuminate, $1\frac{1}{2}$-$2\frac{1}{4}$ in. long, $\frac{1}{2}$-$\frac{3}{4}$ in. broad, distinctly nervose above and *puberulous near the midrib*, scaly below, *the scales usually about their own diameter apart*; leaf-stalks on young shoots fringed with long hairs.

INFLORESCENCE: terminal, *3-5-flowered*, subumbellate; flower-stalks $\frac{1}{4}$ in. long, scaly.

FLOWERS: lemon-yellow, not spotted.

CALYX: obsolete, densely scaly outside, fringed with minute hairs.

COROLLA: 5-lobed, about 1 in. long; tube and lobes scaly outside.

STAMENS: 10, exserted, very slightly pubescent or nearly glabrous.

OVARY: 5-celled, densely scaly; style smooth, a little longer than the stamens.

CAPSULE: oblong, $\frac{1}{3}$ in. long, densely scaly.

HABITAT: Japan; Simabara and Owari provinces; amongst stones.

RHODODENDRON LUTESCENS, *Franch.*

(R. COSTULATUM, *Franch.*; R. LEMEEI, *Léveillé*; R. BLINII, *Léveillé.*)

ILLUSTRATION—Hutchinson in *Bot. Mag.*, t. 8851 (1920).

HABIT: shrub up to 5 ft. high or more, with elongated branches, the latter sparingly glandular.

LEAVES: scattered, rather few, becoming spreading-reflexed, *lanceolate, acutely-acuminate,* rounded to obtuse at the base, about 2 in. long and $\frac{1}{2}$-$\frac{3}{4}$ in. broad, dull green and with small scattered scales above, pale green below with slightly impressed scales *2 to 3 times their own diameter apart*; leaf-stalks $\frac{1}{6}$-$\frac{1}{4}$ in. long, laxly scaly.

INFLORESCENCE: 3-6-flowered, sometimes 1-flowered, terminal, loose.

FLOWERS: *pale primrose-yellow,* spotted with light green; stalks about $\frac{2}{3}$ in. long, loosely scaly.

RHODODENDRON LUTESCENS, *Franch.* Flowers yellow.
A. Typical leaf. B. Scales on lower surface. C. Flower. D. Stamens. E. Calyx and pistil. F. Calyx and ovary.

CALYX: very short, 5-lobed, scaly outside, lobes obtusely triangular.

COROLLA: widely funnel-shaped, $1\frac{1}{4}$-$1\frac{1}{2}$ in. across, with *5 distinct pockets above the base outside,* a few scattered scales outside; *tube softly pubescent outside in the upper part*; lobes 5, spreading, oblong, $\frac{2}{3}$ in. long, $\frac{1}{3}$ in. broad, not notched.

STAMENS: 10, far exserted, 5 longer; shorter filaments densely pubescent in the *lower third,* the longer filaments much less pubescent; anthers lemon-yellow.

OVARY: 5-celled, covered with silvery *overlapping* scales; style as long as the long stamens, very *slightly hairy* near the base.

CAPSULE: $\frac{1}{2}$ in. long, oblique at the base, densely scaly.

HABITAT: Western Szechuan and Yunnan, up to 9000 ft. alt.; common in thickets and margins of woods fully exposed to the sun.

RHODODENDRON TRIFLORUM, *Hook. f.* Flowers pale yellow with green spots.

A. Portion of leaf showing scales below. B. Enlarged scale. C. Stamen. D. Pistil. E. Cross-section of ovary.

RHODODENDRON TRIFLORUM, *Hook. f.*

ILLUSTRATION—Hook. f. *Rhod. Sikkim Himal.*, t. 19 (1849).

HABIT: shrub to 8 ft. high; branchlets with small black glands.

LEAVES: *lanceolate or oblong-lanceolate, very acute*, obtuse or rounded at the base, 1½-2½ in. long, ½-1¼ in. broad, *glabrous above*, densely scaly-glandular below, the scales very small, uniform and *less than their own diameter apart*; leaf-stalks ¼ in. long, scaly.

INFLORESCENCE: 3-flowered, terminal, *the leafy shoots already developed with the open flower*; flower-stalks ⅓-½ in. long, closely scaly.

FLOWERS: fragrant, light yellow, spotted with green.

CALYX: small, shortly 5-lobed, lobes densely scaly outside and *fringed with a few very short hairs.*

COROLLA: 5-lobed, about 1½ in. long; *tube rather densely scaly outside* and outside the lobes.

STAMENS: 10, exserted, pubescent above the base.

OVARY: 5-celled, densely scaly; style glabrous.

CAPSULE: ½ in. long, covered with small scales.

HABITAT: Sikkim and Bhutan Himalayas, 8000-9500 ft.

RHODODENDRON WONGII, *Hemsl. & E. H. Wils.*

Illustration—

Habit : shrub 4-6 ft. high ; *branchlets densely scaly.*

Leaves : oblong-elliptic, *very obtuse at both ends but mucronate at the apex,* about 1 in. long and ½ in. broad, dark above, scaly below, the scales *equal-sized and less than their own diameter apart or subcontiguous* ; petiole ⅛ in. long.

Inflorescence : terminal, 3-flowered ; flower-stalks ⅓ in. long, laxly scaly.

Flowers : cream-coloured.

Calyx : distinct, 5-lobed, lobes scaly outside and sometimes with 2 or 3 weak hairs on the margin.

Corolla : less than 1 in. long, 5-lobed, *not scaly outside.*

Stamens : 10, long-exserted, villous in the lower part.

Ovary : 5-celled, densely scaly ; style glabrous.

Habitat : Szechuan, near Tatsienlu, 11,000 ft.

RHODODENDRON XANTHOCODON, *Hutchinson in Gard. Chron.*, xcv. (1934), 409.

. Illustration—

Habit : slender tree 15-20 ft. high ; one-year-old growths green and covered with golden-brown scales ; leaf-bud-scales early deciduous.

Leaves : evergreen, scattered, elliptic or oblong-elliptic, rounded or very shortly cuneate at the base, rounded and abruptly mucronate at the apex, 3-7 cm. long, 2-4·5 cm. broad, dull green and densely lepidote above, densely lepidote and glaucous-green below, scales less than their own diameter apart, unequal-sized and golden ; stalk 1-1·5 cm. long, lepidote.

Inflorescence : terminal, 5-6-flowered, subumbellate ; flower-bud-scales early deciduous ; stalks 1·5-2 cm. long, loosely scaly.

Flowers : rich cream-yellow, not spotted.

Calyx : small, with short triangular lobes, densely lepidote outside.

Corolla : campanulate, with slightly spreading lobes ; tube not lepidote outside, 2 cm. long, about 1·3 cm. diameter in the middle ; lobes rounded-oblong, about 1 cm. long.

Stamens : 10, shorter than the corolla ; filaments pubescent towards the base, creamy white ; anthers pale brown.

Pistil : ovary 5-celled, densely covered with pale green scales ; style longer than the stamens, glabrous, with a deeply lobed stigma.

Capsule : about 1·3 cm. long, densely lepidote.

Habitat : Tibet ; Nam La, 12,000 ft., Ward 6026 (originally described from a living specimen grown at Bodnant, North Wales, and from Ward's dried specimen).

SUBSERIES YUNNANENSE

RHODODENDRON AECHMOPHYLLUM, *Balf. f. & Forrest.*

An imperfectly known species almost a counterpart of *R. longistylum*, but with a very obsolete calyx which is neither scaly outside nor fringed with hairs. I have seen only one specimen, from the Edinburgh Herbarium, with withered flowers and young fruit.

HABITAT: South-Western Szechuan; Mu-li Mts., 11,000-12,000 ft.; shrub 3-4 ft.

RHODODENDRON BODINIERI, *Franch.*

Illustration—

Habit : small shrub ; branchlets scaly.

Leaves : oblong-lanceolate to obovate, *markedly long-acuminate*, rounded to subacute at the base, $1\frac{3}{4}$-3 in. long, $\frac{2}{3}$-1 in. broad, glabrous or nearly so above, scaly below, the scales *3-4 times their own diameter apart* ; leaf-stalks $\frac{1}{3}$ in. long, scaly.

Inflorescence : terminal, shortly racemose, 6-7-flowered ; flower-stalks $\frac{1}{3}$-$\frac{1}{2}$ in. long, scaly.

Flowers : rose, spotted with purple.

Calyx : an *undulate rim*, scaly outside.

Corolla : 5-lobed, about $1\frac{1}{4}$ in. long ; tube not scaly outside.

Stamens : 10, exserted, shortly pubescent in the lower part.

Ovary : 5-celled, scaly ; style glabrous.

Habitat : Yunnan ; between Ma Kay and Se-tsong-hien. Kweichow ; near Kouy-Yang.

RHODODENDRON CHARIANTHUM, *Hutchinson.*

ILLUSTRATION—Hutchinson in *Bot. Mag.*, t. 8665 (1916).

HABIT : shrub ; young branchlets sparingly scaly-glandular.

LEAVES : oblanceolate or elliptic-oblanceolate, bluntly mucronate, cuneate at the base, 1-2 in. long, $\frac{1}{3}$-$\frac{3}{4}$ in. broad, scaly on both surfaces, the scales below rather dense, of two sizes, numerous smaller ones pale yellow, with scattered larger brown ones here and there ; leaf-stalks $\frac{1}{6}$ in. long.

INFLORESCENCE : 9-10-*flowered*, a terminal corymb with a very short axis ; flower-stalks $\frac{1}{2}$ in. long, sparingly scaly.

FLOWERS : rose, *densely spotted with red on the upper part of corolla within.*

CALYX : obsolete, with a shallow lobulate margin, scaly outside.

COROLLA : gaping, 5-lobed, *not scaly outside*, about 1 in. long.

STAMENS : 10, exserted, pubescent in lower half.

OVARY : 5-celled, densely scaly ; style *pubescent near the base.*

CAPSULE : *very short*, $\frac{1}{4}$ in. long, minutely scaly.

HABITAT : Not known, but probably Yunnan or Szechuan ; described originally from cultivated plants at Kew raised from seeds from Arnold Arboretum in 1909 ; very close to *R. yunnanense.*

RHODODENDRON CHARTOPHYLLUM, *Franch.*

ILLUSTRATION—*Rev. Hort.*, 1912 : 135.

A distinct species with the general characteristics of *R. yunnanense*, but the leaves usually deciduous, more narrowly oblanceolate, and entirely wanting the bristles on the upper surface, which are typical of true *R. yunnanense*. When the leaves are completely deciduous, the form is then called *R. chartophyllum praecox*. No doubt the two species, both of which grow in Yunnan, hybridise freely, and this probably explains the confusion between them in gardens.

HABITAT : Yunnan, 6000-11,000 ft.

RHODODENDRON DAVIDSONIANUM, *Rehd. & E. H. Wils.*

ILLUSTRATION—Hutchinson in *Bot. Mag.*, t. 8605 (1915), poor pale form; and in *Bot. Mag.*, t. 8759 (1918), as "*R. siderophyllum.*"

HABIT: shrub with rather leggy branches; branchlets scaly-glandular.

LEAVES: *narrowly lanceolate or oblanceolate*, acute and mucronate, subacute at the base, $1\frac{1}{2}$-$2\frac{1}{4}$ in. long, $\frac{1}{2}$-$\frac{3}{4}$ in. broad, *forming a distinct V from the midrib to the margin* (in distinction to the very similar *R. lochmium*), laxly scaly above, densely so below, the scales (in wild specimens) about their own diameter apart, equal-sized; leaf-stalks $\frac{1}{6}$ in. long, scaly.

INFLORESCENCE: terminal and axillary, each 3-6-flowered; flower-stalks $\frac{1}{2}$ in. long, laxly scaly.

FLOWERS: pink, with red spots.

CALYX: very small, undulate, very scaly outside.

COROLLA: 5-lobed, 1-$1\frac{1}{2}$ in. long, not scaly outside.

STAMENS: 10, exserted, pubescent in the lower part.

OVARY: 5-celled, densely scaly; style glabrous.

CAPSULE: $\frac{1}{3}$ in. long, rather densely glandular-scaly.

HABITAT: Western Szechuan; very common in exposed sunny situations, 6000-10,000 ft.

RHODODENDRON ERIANDRUM, *Lévl.*

(R. RAROSQUAMEUM, *Balf. f.*)

ILLUSTRATION—

HABIT : shrub 3-5 ft. high, with numerous leggy branches with pale bark ; *annual shoots very short*, purplish, *not scaly.*

LEAVES : elliptic, obtuse at each end, very slightly mucronate at the apex, leathery, about $1\frac{1}{4}$ in. long and $\frac{1}{2}$-$\frac{3}{4}$ in. broad, shining and *not at all scaly above, very laxly scaly below*, the scales 4-5 times their own diameter apart or more ; leaf-stalks $\frac{1}{4}$ in. long, purplish, not scaly.

INFLORESCENCE : terminal, 3-4-flowered ; flower-stalks $\frac{1}{3}$ in. long, not scaly.

FLOWERS : deep rose-lavender, with olive brown markings.

CALYX : a mere rim, glabrous outside but with a few minute scales on the margin.

COROLLA : $\frac{3}{4}$ in. long, 5-lobed ; tube not scaly outside.

STAMENS : 10, exserted, some slightly pubescent, others glabrous.

OVARY : 5-celled, densely scaly ; style glabrous.

HABITAT : Yunnan ; Niou-Ko-tien-tien, 10,000 ft. ; Tali Shan, 9000-10,000 ft.

RHODODENDRON ERILEUCUM, *Balf. f. & Forrest.*

Illustration—

Very closely allied to *R. zaleucum* (q.v.), with the same markedly glaucous leaves but different in shape, being elliptic or elliptic-obovate, and rounded to the mucronate apex. Perhaps only a variety, but the difference in shape seems constant throughout several specimens. In the young stage the leaves are fringed with slender hairs, but these soon drop off. Flowers white.

Habitat: Yunnan; Shweli—Salween Divide, 25° 30′ N., 9000-10,000 ft.; shrub of 6-9 ft., on open rocky slopes.

RHODODENDRON HESPERIUM, *Balf. f. & Forrest.*

Illustration—

Habit : shrub 4-6 ft. high ; *branchlets not scaly when mature.*

Leaves : oblanceolate or oblong-oblanceolate, acute at both ends, $1\frac{1}{4}$-$2\frac{1}{2}$ in. long, $\frac{1}{3}$-$\frac{1}{5}$ in. broad, glabrous and shining above, green and very laxly scaly below, the scales 6-8 times their own diameter apart ; leaf-stalks about $\frac{1}{3}$ in. long, scarcely scaly.

Inflorescence : paired at the apex of the shoot, each bud 2-3-flowered, or rarely up to 6-flowered ; flower-stalks $\frac{1}{2}$ in. long, very slightly scaly.

Flowers : smoky rose-lavender, deepest at the base, with olive-brown markings.

Calyx : a mere rim, scaly outside.

Corolla : about $1\frac{1}{4}$ in. long, 5-lobed ; tube not scaly outside, lobes very slightly so.

Stamens : 10, exserted, *only one or two of the filaments slightly pubescent, the remainder glabrous.*

Ovary : densely scaly ; style glabrous.

Habitat : Yunnan ; Eastern flank of the Tali Shan, 9000-10,000 ft. ; on ledges of cliffs in ravines.

RHODODENDRON HORMOPHORUM, *Balf. f. & Forrest.*

Illustration—

Habit : a leggy shrublet up to 3 ft. high, habit probably precocious ; young branchlets scaly.

Leaves : lanceolate, acute at both ends, mucronate, $1\frac{1}{4}$-2 in. long, $\frac{1}{3}$-$\frac{3}{4}$ in. broad, *fringed with weak hairs*, scaly on both surfaces, the scales below pale yellow and *very wide apart*, green between the scales ; *leaf-stalks fringed with long hairs.*

Inflorescence : terminal, umbellate, 3-4-flowered ; flower-stalks $\frac{1}{4}$-$\frac{1}{3}$ in. long, with a few scattered scales.

Flowers : rose with brown markings.

Calyx : *a rim*, fringed with scales only.

Corolla : $1\frac{1}{4}$ in. long, 5-lobed ; tube not scaly outside, lobes slightly so.

Stamens : 10, exserted, pubescent in the lower part.

Ovary : 5-celled, scaly ; style glabrous.

Capsule : $\frac{1}{3}$ in. long, with scattered pale yellow scales.

Habitat : South-Western Szechuan ; Mu-li Mts., 11,000-12,000 ft. ; open dry stony pasture.

RHODODENDRON HYPOPHAEUM, *Balf. f. & Forrest.*

Illustration—

Habit : shrub 4-5 ft. high ; branchlets short, with very small scattered scales.

Leaves : oblanceolate to oblong, acutely acuminate, subacute at the base, $1\frac{1}{2}$-$2\frac{1}{4}$ in. long, $\frac{1}{2}$-1 in. broad, with numerous small scales above, *densely scaly and glaucous below*, the scales very small and often *contiguous* or up to $\frac{1}{2}$ their own diameter apart ; leaf-stalks $\frac{1}{4}$-$\frac{1}{2}$ in. long, impressed-scaly.

Inflorescence : with *persistent bud-scales*, 2-3 buds to each, each bud 3-4-flowered ; flower-stalks $\frac{1}{3}$ in. long, scaly.

Flowers : white, faintly tinged with rose.

Calyx : *a mere rim*, scaly outside.

Corolla : about 1 in. long, 5-lobed, *not scaly outside.*

Stamens : 10, some of them shortly pubescent.

Ovary : 5-celled, densely scaly ; style glabrous.

Capsule : very small, $\frac{1}{3}$ in. long, finely scaly.

Habitat : South-Western Szechuan : mountains around Mu-li, valley of Litang River, 11,000 ft. ; open situations in and on margins of pine forests.

RHODODENDRON LEILUNGENSE, *Balf. f. & Forrest.*

Illustration—

Habit : shrub 2-3 ft. high, with short twiggy scaly branches.

Leaves : *broadly obovate-elliptic*, rounded to a small mucro at the apex, rounded to a subacute base, $\frac{3}{4}$-$1\frac{1}{2}$ in. long, $\frac{1}{2}$-$\frac{3}{4}$ in. broad, *scaly-glandular on both surfaces*, the scales below almost contiguous or up to $\frac{1}{2}$ their own diameter apart, *glaucous* between ; leaf-stalks $\frac{1}{4}$ in. long.

Inflorescence : *terminal and axillary*, each bud few-flowered ; flower-stalks $\frac{1}{4}$ in. long, scaly.

Flowers : pale rose.

Calyx : saucer-shaped, scarcely lobed, scaly outside the base only.

Corolla : about $\frac{2}{3}$ in. long, 5-lobed ; tube not scaly outside, lobes minutely scaly.

Stamens : 10, pubescent in the lower part.

Ovary : scaly ; style glabrous.

Habitat : Yunnan ; Lei-lung-shan, 28° 10′ N., 9000 ft. ; rocky dry slopes.

RHODODENDRON LOCHMIUM, *Balf. f.*

(R. GLAUCOPHYLLUM, *Balf. f.*, name only.)

ILLUSTRATION—

HABIT : straggling shrub with " leggy " branches ; branchlets rather densely scaly.

LEAVES : oblanceolate, acuminate to an obtuse mucro, acute at the base, $1\frac{1}{2}$-$2\frac{1}{2}$ in. long, $\frac{1}{2}$-1 in. broad, the upper surface *markedly recurved from the midrib* (in distinction to the very similar *R. Davidsonianum*), *glabrous above*, rather densely scaly below, the scales $1\frac{1}{2}$-2 times their own diameter apart, unequal-sized ; leaf-stalks $\frac{1}{4}$ in. long, scaly.

INFLORESCENCE : *terminal and axillary* in the upper leaf axils, each bud containing 3-4 flowers ; flower-stalks $\frac{1}{2}$ in. long, laxly scaly.

FLOWERS : very like those of *R. Davidsonianum*.

CALYX : a mere plate-like body, not lobed, scaly outside.

COROLLA : $1\frac{1}{4}$-$1\frac{1}{2}$ in. long, 5-lobed, *glabrous outside*.

STAMENS : 10, exserted, slightly pubescent towards the base.

OVARY : 5-celled, densely scaly ; style glabrous.

HABITAT : Probably Western Szechuan ; described originally from cultivated specimens passing as *R. Davidsonianum* ; very like the latter, but the two halves of the leaves are recurved from the midrib, and do not form the deep V characteristic of *R. Davidsonianum*.

RHODODENDRON LONGISTYLUM, *Rehd. & E. H. Wils.*

Illustration—

Habit : shrub up to 7 ft. high ; branchlets short, slightly scaly when young.

Leaves : *narrowly oblanceolate*, subacute, narrowed from above the middle to the base, 1-2 in. long, $\frac{1}{3}$-$\frac{1}{2}$ in. broad, glabrous but with markedly impressed veins above, very laxly scaly below, *the scales very small and several times their own diameter apart* ; leaf-stalks $\frac{1}{6}$-$\frac{1}{4}$ in. long.

Inflorescence : terminal, *racemose*, 8-flowered or more ; flower-stalks $\frac{1}{4}$-$\frac{1}{3}$ in. long, scaly.

Flowers : small, pink.

Calyx : *well developed, deeply unequally 5-lobed*, lobes oblong, with scales outside and *often a few hairs on the margin.*

Corolla : about $\frac{3}{4}$ in. long, 5-lobed ; tube not scaly outside ; lobes slightly scaly.

Stamens : 10, exserted, pubescent in the lower part.

Ovary : 5-celled, densely scaly ; style glabrous, *often bright red.*

Capsule : $\frac{1}{3}$ in. long, densely scaly.

Habitat : Western Szechuan, 3000-7000 ft.

RHODODENDRON PLEISTANTHUM, *Balf. f. mss.*

General characteristics of *R. Davidsonianum*, but the scales on the lower surface of the leaves much fewer and laxer, 3-4 times their own diameter apart; flower-stalks and calyx outside not at all scaly; some of the stamens glabrous, the others slightly pubescent. Leaves not scaly on the upper surface. Flowers violet.

HABITAT: Yunnan, rocks of Tchou-nen-tsen, 8000 ft.

RHODODENDRON RIGIDUM, *Franch.*

Illustration—

Habit : shrub 4-7 ft. ; branchlets scarcely scaly.

Leaves : oblanceolate, mucronate, narrowed to the base, $1\frac{1}{4}$-2 in. long, $\frac{1}{3}$-$\frac{3}{4}$ in. broad, scaly glandular on both surfaces, the scales below $1\frac{1}{2}$-2 times their own diameter apart, margins with a *few bristles towards the base* ; leaf-stalks about $\frac{1}{6}$ in. long, *with a few bristles on the margin.*

Inflorescence : terminal, about 4-flowered ; flower-stalks very short, about $\frac{1}{6}$ in. long, slightly scaly.

Flowers : very pale rose with crimson-brown markings.

Calyx : obsolete, *rim-like*, undulate, slightly scaly outside.

Corolla : about $\frac{3}{4}$ in. long, 5-lobed ; tube not scaly outside, lobes very slightly so.

Stamens : 10, exserted, villous in the lower part.

Ovary : covered with scales ; style glabrous.

Habitat : Yunnan ; Lan-kien-ho, 7800 ft. ; between La-shi-pa and the Yangtze Valley, 9000 ft. ; on cliffs.

RHODODENDRON SEARSIAE, *Rehd. & E. H. Wils.*

ILLUSTRATION—Stapf in *Bot. Mag.*, t. 8993 (1924). See figure below.

HABIT: small shrub; branchlets closely covered with small scales.

LEAVES: oblanceolate, acutely acuminate, mucronate, acute at the base, 2-3 in. long, $\frac{1}{2}$-$\frac{3}{4}$ in. broad, rather densely scaly below, *scales very unequal, $\frac{1}{2}$-$\frac{3}{4}$ their own diameter apart*; leaf-stalks $\frac{1}{4}$ in. long, densely scaly.

INFLORESCENCE: 3-4-flowered, terminal; flower-stalks $\frac{1}{3}$ in. long, rather densely scaly.

RHODODENDRON SEARSIAE, *Rehd. & E. H. Wils.* Flowers white or mauve. Calyx variable.

A. Typical leaf. B. Lower surface of leaf showing scales. C. Stamens. D. Flower. E. Calyx and pistil.

FLOWERS: white or mauve.

CALYX: *well developed, unequally 5-lobed, the back and front lobes sometimes much larger* (about $\frac{1}{6}$ in.) and *fringed with long hairs*, all densely scaly outside.

COROLLA: 5-lobed, $1\frac{1}{3}$ in. long, *not scaly outside.*

STAMENS: 10, shortly pubescent in the lower part.

OVARY: 5-celled, densely scaly; style glabrous.

CAPSULE: $\frac{1}{2}$ in. long, finely scaly.

HABITAT: Western Szechuan; Wa-shan, 7000-9400 ft.

RHODODENDRON SIDEROPHYLLUM, *Franch.*

(R. OBSCURUM, *Franch.*, name only.)

ILLUSTRATION—

HABIT : shrub 4-9 ft. high ; branchlets closely scaly.

LEAVES : oblanceolate or elliptic-oblanceolate, subacute or subacuminate, acute at the base, 2-3½ in. long, ¾-1¼ in. broad, scaly below, the scales ¾-1½ times their own diameter apart, a few here and there contiguous, subequal ; leaf-stalks ⅓-½ in. long, deeply grooved and densely scaly.

INFLORESCENCE : *terminal and axillary in a dense cluster at the apex of the shoots*, each about 4-flowered ; flower-stalks ⅓-½ in. long, scaly ; *bud-scales subpersistent, densely ciliate and scaly.*

FLOWERS : whitish to violet.

CALYX : shortly cupular, undulate on the margin, very densely scaly outside.

COROLLA : 5-lobed, about ¾-½ in. long ; *tube not scaly outside*, the lobes with a few scales.

STAMENS : 10, *one or two only slightly pubescent, the others glabrous*, exserted.

OVARY : 5-celled, densely scaly ; style glabrous.

HABITAT : South-Western Yunnan, 6000-7000 ft.

RHODODENDRON STEREOPHYLLUM, *Balf. f. & W. W. Sm.*

Illustration—

Habit : shrub up to 6 ft. high ; branchlets covered with small resinous glands.

Leaves : *obovate*, rounded to a mucronate apex, $1\frac{1}{2}$-2 in. long, $\frac{1}{2}$-$1\frac{1}{4}$ in. broad, *equally and rather densely scaly on both surfaces*, the scales below small and uniform, *about* 1-$1\frac{1}{2}$ *times their own diameter apart* ; leaf-stalks $\frac{1}{4}$ in. long, scaly.

Inflorescence : terminal and axillary, each 3-4-flowered ; bud-scales persistent at flowering time.

Flowers : seen only in bud, but *very small*, rose.

Calyx : short and rim-like, densely scaly outside.

Corolla : bud not scaly outside except a few on the back of the lobes.

Stamens : 10, hairy in lower part.

Ovary : scaly ; style glabrous.

Habitat : Yunnan ; mountains north-east of Yangtze bend, 10,000 ft.

RHODODENDRON SUBEROSUM, *Balf. f. & Forrest.*

Illustration—

Habit: shrub 5-7 ft., very similar in all respects to *R. yunnanense*, Franch., but the flowers apparently smaller, faintly flushed rose with deep rose markings, the leaves bristly only on the margin, the bristles resembling teeth; scales on the lower surface 2-3 times their own diameter apart; calyx densely bristly with long hairs; corolla laxly scaly outside the tube and lobes.

Habitat: Yunnan; eastern flank of the N'Maikha—Salween Divide, 26° 25′ N., 12,000-13,000 ft., in open scrub by streams.

RHODODENDRON TATSIENENSE, *Franch.*

Illustration—

Habit : shrub with small twiggy laxly scaly branchlets.

Leaves : oblong-lanceolate, acute, comparatively small, *about 1 in. long and* $\frac{1}{3}$ *in. broad,* laxly and minutely scaly above, more densely so below, the scales about 1-2 times their own diameter apart, small and fleshy ; leaf-stalks $\frac{1}{6}$ in. long.

Inflorescence : terminal, 3-4-flowered, umbellate ; *flower-stalks very short,* about $\frac{1}{12}$ in. long, slightly scaly.

Flowers : colour ?, very small.

Calyx : a mere rim, subentire, glabrous.

Corolla : *not quite* $\frac{1}{2}$ *in. long,* 5-lobed ; tube not scaly, lobes minutely and slightly so outside.

Stamens : 10, exserted, pubescent in the lower part.

Ovary : densely scaly ; style glabrous.

Habitat : Western Szechuan ; near Tatsienlu, valley of the Jerikkou.

RHODODENDRON VILMORINIANUM, *Balf. f.*

Illustration—Flora & Sylva **3**: **162** (1905), as "*R. Augustinii.*"

Habit: weak-growing shrub; branchlets scaly and slightly pubescent.

Leaves: *lanceolate* or *oblanceolate*, rather long-mucronate, subacute at the base, $1\frac{1}{2}$-$2\frac{1}{4}$ in. long, $\frac{1}{3}$-$\frac{3}{4}$ in. broad, *pubescent on the midrib above* but otherwise nearly glabrous, scaly below, *scales about their own diameter apart*, rather fleshy; leaf-stalks with a *few long bristles on the margins.*

Inflorescence: terminal, 3-4-flowered; flower-stalks scaly, $\frac{1}{3}$ in. long.

Flowers: at first yellowish-white, then white with ochre-coloured spots inside the back.

Calyx: unequally 5-lobed, about $\frac{1}{12}$ in. long, scaly outside and on the margin.

Corolla: $1\frac{1}{4}$ in. long, 5-lobed, *the tube glandular-scaly outside.*

Stamens: 10, exserted, villous well above the base.

Ovary: 5-celled, scaly; style glabrous.

Habitat: Probably Eastern Szechuan; known only in cultivation.

RHODODENDRON YUNNANENSE, *Franch.* Flowers white with carmine spots.

A. Upper surface of leaf. B. Lower surface of leaf. C. Scale from leaf. D. Stamen. E. Pistil.

RHODODENDRON YUNNANENSE, *Franch.*

ILLUSTRATION—Hook. f., *Bot. Mag.*, t. 7614 (1898).

HABIT : shrub with leggy branches and the leaves often drooping or reflexed ; young branchlets with scattered blackish glands.

LEAVES : evergreen or subevergreen, oblanceolate or obovate-oblanceolate, rounded or triangular to a distinct mucro at the apex, acute at the base, $1\frac{3}{4}$-$2\frac{1}{2}$ in. long, $\frac{1}{2}$-1 in. broad, *setose-pilose above and on the margin* especially when young, scaly above and below, the scales below *about 2-4 times their own diameter apart*, rather fleshy ; leaf-stalks about $\frac{1}{3}$ in. long.

INFLORESCENCE : *terminal or terminal and lateral*, each bud 3-5-flowered, *very shortly racemose* ; flower-stalks laxly scaly.

FLOWERS : pinkish or nearly white, spotted with red.

CALYX : very short, hardly lobed, scaly outside.

COROLLA : 5-lobed, about $1\frac{1}{2}$ in. long, slightly irregular ; tube not scaly outside.

STAMENS : 10, long-exserted, shortly pubescent in the lower part.

OVARY : 5-celled, densely scaly, with a prominent hairy disk at the base ; style glabrous.

CAPSULE : $\frac{3}{4}$ in. long, laxly scaly glandular.

HABITAT : Yunnan, about 9000 ft.

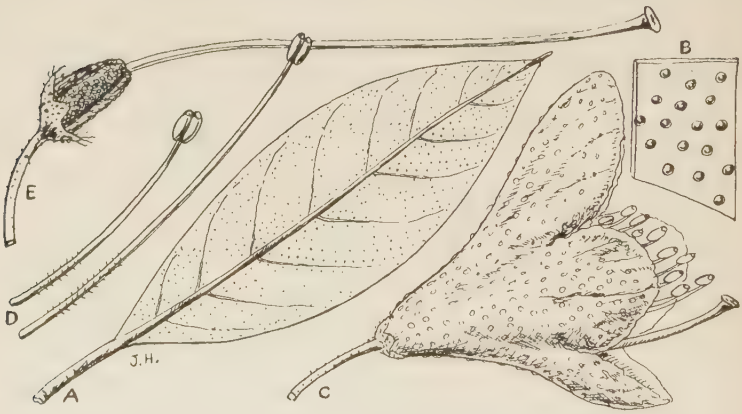
RHODODENDRON ZALEUCUM, *Balf. f. & W. W. Sm.*

ILLUSTRATION—See figure below.

HABIT : shrub or tree up to 35 ft. high.

LEAVES : *lanceolate* or *oblong-lanceolate,* acutely acuminate, rounded to subacute at the base, $1\frac{1}{4}$-3 in. long, $\frac{1}{2}$-$1\frac{1}{4}$ in. broad, glabrous above, *very glaucous below* (especially in older leaves) and scaly, *the scales wide apart* equal, about $1\frac{1}{2}$-2 times their own diameter apart ; leaf-stalks $\frac{1}{2}$ in. long, scaly.

INFLORESCENCE : 3-4-flowered, terminal ; flower-stalks $\frac{1}{2}$ in. long, scaly.



RHODODENDRON ZALEUCUM, *Balf. f.* Flowers white or rose.
A. Typical leaf. B. Scales on lower surface. C. Flower. D. Stamens.
E. Calyx and pistil.

FLOWERS : white or rose, slightly fragrant.

CALYX : small, lobed, densely scaly outside, *lobes with a few crinkly hairs on the margin.*

COROLLA : 5-lobed, $1\frac{1}{2}$ in. long ; *tube and lobes with numerous fleshy scales outside.*

STAMENS : 10, a little longer than the corolla-tube, shortly pubescent towards the base.

OVARY : 5-celled, scaly ; style glabrous.

CAPSULE : $\frac{1}{2}$ in. long, closely glandular-scaly.

HABITAT : Western Yunnan and Eastern Upper Burma, 9000-11,000 ft., either as a shrub on rocky slopes or as a tree in rain forest.

VACCINIOIDES SERIES

General Characters :—Small, usually epiphytic shrubs; branchlets usually scabrid. Leaves obovate, often emarginate, leathery, punctate-scaly below, the scales wide apart. Inflorescence terminal, 1-few-flowered. Flowers various in colour. Calyx very short, rarely larger. Corolla campanulate, loosely scaly outside. Stamens 10, exserted, glabrous or pubescent. Ovary 5-celled, scaly; style glabrous or pubescent. Capsule linear, the seeds with very long thread-like tails.

Distribution :—Eastern Himalaya to the Philippine Islands, up to 8000 ft.

A very distinct and natural series, almost entirely epiphytic, the seeds with remarkable thread-like elongated tails at each end.

J. H.

KEY TO THE SPECIES

A. Calyx well developed, $\frac{1}{8}$-$\frac{1}{6}$ in. long, deeply lobed to the base; branchlets very scabrid:

B. Leaves about $\frac{3}{4}$ in. long, about $\frac{1}{4}$ in. broad, without distinct lateral nerves . . . . . **vaccinioides.**

B. Leaves 1-1$\frac{1}{2}$ in. long, $\frac{1}{2}$-$\frac{2}{3}$ in. broad, with distinct lateral nerves impressed above . . . **asperulum.**

A. Calyx very short and rim-like:

B. Style softly pubescent in the lower part; inflorescence about 5-flowered . . . . . **Vidalii.**

B. Style glabrous; inflorescence about 4-flowered:

Leaves broadly obovate . . . **Kawakamii.**

Leaves linear-oblanceolate . . . **rosmarinifolium.**

B. Style glabrous; inflorescence 1-flowered:

C. Corolla softly pubescent outside . . **Quadrasianum.**

C. Corolla scaly outside but not pubescent:

D. Leaves broadly obovate, about twice as long as broad:

E. Ovary scaly and pubescent; flowers orange **insculptum.**

E. Ovary not pubescent; flowers yellow . **emarginatum.**

D. Leaves cuneate-oblanceolate, nearly four times as long as broad . . . . . **euonymifolium.**

RHODODENDRON ASPERULUM, *Hutchinson & Ward, n. sp.*

Illustration—

Habit : an epiphyte on *Alder* trees or growing on boulders ; one-year-old and young shoots very closely scabrid with warts, reddish.

Leaves : obovate-oblanceolate, emarginate and mucronate, 1-1½ in. long, ½-⅔ in. broad, leathery, loosely glandular-punctate below, the glands 2-3 times their own diameter apart, with distinct lateral nerves impressed on the upper surface.

Inflorescence : 3-flowered, terminal ; flower-stalks about ½ in. long, slightly warted.

Flowers : pale flesh pink, with orange anthers.

Calyx : *deeply lobed*, lobes oblong, ⅙ in. long, loosely scaly outside.

Corolla : shortly campanulate, ⅓ in. long, 5-lobed, slightly scaly outside.

Stamens : 10, exserted, pubescent in the middle third.

Ovary : ovoid, scaly, gradually passing into the thick glabrous style.

Capsule : 1 in. long, opening from the top downwards ; seeds minute, with a long thread-like tail at each end.

Habitat : Southern Tibet ; Seinghku Wang [28° 5′ N., 97° 30′ E.], on alders and other trees and boulders in open pastures [*Ward*, 6801 type] ; Valley of the Di Chu, 7000 ft. [*Ward*, 7163].

RHODODENDRON EMARGINATUM, *Hemsl.*

ILLUSTRATION—

HABIT: shrub 2 ft., with spreading branches; branchlets scabrid with small scales, the winter bud-scales early deciduous.

LEAVES: in whorls of 3-4, obovate-emarginate at the apex, narrow to the base, about 1½ in. long and ¾ in broad, punctulate-lepidote on the lower surface with about 3-4 pairs of prominent lateral nerves, the scales about 3 times their own diameter apart.

INFLORESCENCE: 1-flowered, with a few bracts at the base; flower-stalks ¾ in. long, scaly-glandular.

FLOWERS: yellow.

CALYX: *very small* and rim-like, scaly outside.

COROLLA: campanulate, ½ in. long, 5-lobed, scaly outside.

STAMENS: 10, exserted, pubescent.

OVARY: ovoid, short, scaly; style glabrous.

CAPSULE:

HABITAT: Yunnan, mountains to south-west of Mengtze, 6000 ft.

RHODODENDRON EUONYMIFOLIUM, *Lévl.*

Illustration—

Habit : small shrub ; branchlets minutely glandular ; leaf-bud-scales early deciduous.

Leaves : narrowly cuneate-oblanceolate, mucronate, scarcely emarginate, about 1½ in. long and ⅓ in. broad, thick and leathery, slightly punctulate above and below, the dots fairly wide apart ; leaf-stalks slightly scaly.

Inflorescence : terminal, 1-flowered ; flower-bud-scales persistent ; flower-stalks ½ in. long, minutely scaly.

Flowers : colour not known.

Calyx : *very small,* scaly outside.

Corolla : seen only in withered state, more or less as in *R. emarginatum.*

Stamens : 10, pubescent.

Ovary : minutely scaly ; style very short and thick, glabrous.

Capsule : ½ in. long, minutely scaly.

Habitat : Kwei-chow ; Pin-fa, on rocks.

RHODODENDRON INSCULPTUM, *Hutchinson & Ward, n. sp.*

Illustration—

Habit: an epiphyte; branchlets rough-scaly when young, the winter bud-scales early deciduous.

Leaves: whorled, *broadly obovate-spathulate*, emarginate and mucronate at the apex, gradually narrowed to the base, about 1½ in. long, with about three pairs of much impressed nerves on the upper surface, punctulate-lepidote below.

Inflorescence: axillary, 1-flowered; flower-stalks 1 in. long, angular, with a cluster of persistent scales at the base.

Flowers: bright orange, with brownish-red anthers; style orange.

Calyx: *small*, shortly undulately 5-lobed, scaly outside.

Corolla: broadly campanulate, fleshy, ½ in. long, 5-lobed, loosely covered with small scales outside, pubescent inside the top of the tube.

Stamens: 10, exserted, 5 long and 5 short, pubescent to above the middle.

Ovary: 5-celled, oblong-ellipsoid, densely scaly and softly pubescent; style as long as the ovary, stout, glabrous, gradually expanded upwards, sharply bent down between the two lower corolla-lobes.

Capsule: about 1 in. long, valves opening from the top, thin, sparsely covered with very small scales.

Habitat: Southern Tibet; Seinghku Wang [28° 5′ N., 97° 30′ E.], temperate rain-forest at 6000-7000 ft. [*Ward*, 6735 type].

RHODODENDRON KAWAKAMII, *Hayata.*

Illustration—

Habit : shrub 3-5 ft. high, usually epiphytic ; branchlets minutely glandular.

Leaves : obovate, slightly apiculate, about 2 in. long, $\frac{3}{4}$-$1\frac{1}{4}$ in. broad, thick and leathery, glabrous above, finely punctulate-glandular below, the scales about 3 times their own diameter apart ; lateral nerves fairly distinct below ; leaf-stalks slightly scaly.

Inflorescence : umbellate, 3-4-flowered ; flower-stalks 1 in. long in fruit.

Flowers : colour not known.

Calyx : *very small*, scaly outside.

Corolla : widely funnel-shaped, $\frac{1}{3}$ in. long.

Stamens : 10, filaments unequal, villous at the base.

Ovary : shortly pubescent ; style very short, curved, glabrous.

Capsule : $\frac{1}{2}$ in. long, minutely scaly.

Habitat : Formosa, Mount Morrison, 7000 ft.

RHODODENDRON QUADRASIANUM, *Vidal.*

(R. MALINDANGENSE, *Merr.*)

ILLUSTRATION—

HABIT : a low bush, sometimes epiphytic ; branchlets slightly puberulous, not scabrid.

LEAVES : numerous and not whorled, narrowly oblanceolate, notched at the apex, $\frac{3}{4}$ in. long and $\frac{1}{6}$-$\frac{1}{4}$ in. broad, thick and leathery, punctate-lepidote below, the scales a little more than their own diameter apart ; lateral nerves not visible.

INFLORESCENCE : 1-flowered, terminal ; flower-stalks $\frac{1}{3}$ in. long, pubescent and slightly scaly.

FLOWERS : red.

CALYX : *very short* and plate-like, densely glandular and pubescent.

COROLLA : cylindric, slightly curved, $\frac{2}{3}$ in. long, densely glandular and *softly pubescent* outside.

STAMENS : 10, *glabrous*, slightly exserted.

OVARY : 5-celled, densely scaly, gradually passing into the glabrous style, which is about as long as the stamens.

CAPSULE : $\frac{1}{2}$ in. long, opening from the top, curved ; seeds tailed.

HABITAT : Philippine Islands ; tops of mountains, 7000-8000 ft.

RHODODENDRON ROSMARINIFOLIUM, *Vidal.*

Illustration—

Habit : slender shrub up to 12 ft. high ; branchlets minutely scaly ; leaf-bud-scales early deciduous.

Leaves : linear-oblanceolate, about $\frac{3}{4}$ in. long and $\frac{1}{6}$ in. broad, rounded or slightly emarginate at the apex, minutely and closely punctulate-glandular below ; leaf-stalks nearly glabrous.

Inflorescence : terminal, about 4-flowered ; flower-bud-scales soon deciduous ; flower-stalks about $\frac{1}{8}$ in. long, scaly.

Flowers : red.

Calyx : *very small*, scaly outside.

Corolla : narrowly tubular, $\frac{1}{3}$ in. long, densely scaly all over the outside.

Stamens : 10, slightly exserted, glabrous.

Ovary : densely scaly ; style glabrous.

Capsule : $\frac{1}{3}$ in. long, minutely scaly.

Habitat : Philippines.

RHODODENDRON VACCINIOIDES, *Hook. f.*

(R. SINOVACCINIOIDES, *Balf. f. & Forrest.*)

ILLUSTRATION—

HABIT : a small epiphyte on trees and on rocks ; branchlets densely rugose with wart-like glands ; winter leaf-bud-scales *persistent for at least a season.*

LEAVES : rather scattered, spathulate-oblanceolate, emarginate and mucronate, about $\frac{3}{4}$ in. long, very loosely punctate-scaly below, *without visible lateral nerves.*

INFLORESCENCE : *1-2-flowered,* terminal ; flower-stalks $\frac{1}{3}$ in. long, scaly.

RHODODENDRON VACCINIOIDES, *Hook. f.* Flowers lilac-pink or whitish.
A. Leaf. B. Stamen. C. Calyx. D. Pistil. E. Seed.

FLOWERS : lilac-pink, or white tinged with pink.

CALYX : lobes 5, oblong, $\frac{1}{8}$ in. long, sparsely scaly.

COROLLA : campanulate, $\frac{1}{3}$ in. long, 5-lobed, very slightly scaly outside.

STAMENS : 10, exserted, pubescent in the middle.

OVARY : ovoid, scaly, gradually passing into the thick short glabrous style.

CAPSULE : 1 in. long, opening from the top ; seeds minute, with a long tail at each end $\frac{1}{4}$ in. long.

HABITAT : Himalaya ; Sikkim ; 6000-7500 ft. ; South-Eastern Tibet ; 8000-12,000 ft.

RHODODENDRON VIDALII, *Rolfe.*

ILLUSTRATION—

HABIT: a small shrub; branchlets glabrous.

LEAVES: in whorls, oblanceolate, obtuse and slightly emarginate at the apex, gradually narrowed to an acute base, $1\frac{1}{4}$-2 in. long, $\frac{1}{3}$-$\frac{3}{4}$ in. broad, with faint lateral nerves, laxly punctate-lepidote below, the dots much more than their own diameter apart; leaf-stalks $\frac{1}{6}$-$\frac{1}{4}$ in. long.

INFLORESCENCE: terminal, *about 5-flowered*; flower-stalks $\frac{1}{4}$-$\frac{1}{2}$ in. long, softly pubescent.

FLOWERS: probably white.

CALYX: very short and rim-like, softly pubescent outside.

COROLLA: openly funnel-shaped, 5-lobed, 1 in. long, the tube glabrous outside, except for a few scales towards the top, and sometimes slightly pubescent.

STAMENS: 10, shortly exserted, softly pubescent in the lower half.

OVARY: densely and softly pubescent; style softly pubescent in the lower third.

CAPSULE: $\frac{3}{4}$ in. long, opening from the top, the valves recurving, smooth.

HABITAT: Philippine Islands; Luzon Island; Boutoc District, Benguet; Loo; Bataan Prov., on the Lamoa River, Mt. Mariveles.

VIRGATUM SERIES

General Characters :—Small shrubs with leggy erect branches ; winter leaf-bud-scales deciduous. Leaves evergreen, narrow or short and elliptic, *densely scaly and glaucous below.* Flowers small, one or few *from axillary buds*, the latter often clustered towards the top of the shoot, the flower-bud-scales *more or less persistent.* Calyx small to well-developed. Corolla pink to mauve or whitish, tubular, 5-lobed, glabrous, scaly or pubescent outside. Stamens 10, hairy in lower part. Ovary 5-celled, densely scaly ; style glabrous or pubescent. Capsule short, 5-celled.

Distribution :—Sikkim to Yunnan, 7000-10,000 ft.

This is one of the few groups of lepidote-leaved Rhododendrons with constantly *axillary* flower-buds. The same character is found in a few species of the *Triflorum* series, of which the species of the present group appear to be somewhat more advanced relatives, the inflorescence in two of them being reduced to a single flower. Considerable variation occurs in *R. racemosum*, a species which seems to be still in a state of flux, with several more or less distinct races. *R. oleifolium* (*R. sinovirgatum* of gardens), from Yunnan, is almost the counterpart of the Himalayan *R. virgatum.*

J. H.

KEY TO THE SPECIES

A. Corolla not pubescent outside or only very slightly so :
  B. Flower-bud-scales glabrous outside ; leaves short and more or less elliptic ; flowers numerous up to 5 in each bud, pink to white ; style glabrous . . **racemosum.**
  B. Flower-bud-scales silky-pubescent outside ; leaves narrow and rather elongated-oblong ; flower solitary from each bud, pale-purple ; style pubescent and scaly in the lower half . . . . . **virgatum.**
A. Corolla rather densely pubescent as well as scaly outside ; flower-bud-scales glabrous ; leaves narrowly lanceolate ; flower solitary from each bud, pink ; style glandular-scaly in the lower half . . . . . **oleifolium.**

RHODODENDRON OLEIFOLIUM, *Franch.*

(R. SINOVIRGATUM, *Balf. f.*)

ILLUSTRATION—Hutchinson in *Bot. Mag.*, t. 8802 (1919).

HABIT: an erect shrub with leggy branches; young shoots scaly.

LEAVES: evergreen, narrowly lanceolate, acute at both ends, up to 2 in. long and $\frac{1}{2}$ in. broad, soon glabrous above, densely scaly below, the scales glandular and about their own diameter apart.

INFLORESCENCE: axillary, *1-2-flowered*, the *bud-scales persistent, glabrous.*

FLOWERS: pink to almost white.

CALYX: well developed, deeply 5-lobed, *scaly outside the base, lobes glabrous.*

COROLLA: 5-lobed, about 1 in. long, *pubescent and scaly all over the outside.*

STAMENS: 10, pubescent in the lower part, slightly exserted.

OVARY: 5-celled, densely scaly; style *glandular in lower part.*

CAPSULE: $\frac{1}{2}$ in. long, densely glandular-scaly.

HABITAT: Yunnan, 8000-10,000 ft.

RHODODENDRON RACEMOSUM, *Franch.*

ILLUSTRATIONS—Hook. f., *Bot. Mag.*, t. 7301 (1893); *Gard. Chron.* 1918, p. 52.

HABIT: erect shrub or shrublet with rather leggy branches; branchlets covered with small glands.

LEAVES: evergreen, oblong-elliptic, mucronate, ½-2 in. long, ⅓-1 in. broad, *glaucous below* and densely scaly, the scales about their own diameter apart or less.

INFLORESCENCE: *axillary*, few-flowered, sometimes *forming a raceme along the branchlet*; stalks densely scaly.

FLOWERS: pink to white.

CALYX: very small, scaly outside.

COROLLA: funnel-shaped, 5-lobed, slightly scaly outside the lobes, *but not pubescent outside the tube.*

STAMENS: 10, exserted, pubescent in the lower part.

OVARY: 5-celled, densely scaly; style as long as stamens, *glabrous.*

CAPSULE: ¼ in. long, laxly covered with small gland-like scales.

HABITAT: Yunnan, 7000-9000 ft.

RHODODENDRON VIRGATUM, *Hook. f.* Flowers pale-purple.
A. Portion of lower surface of leaf. B. Stamen. C. Calyx and pistil.
D. Fruit. (Flowering shoot adapted from Hooker.)

RHODODENDRON VIRGATUM, *Hook. f.*

Illustration—Hook. f., *Himal. Rhod.*, t. 26 (1851).

Habit : an erect shrub with leggy branches and scattered leaves.

Leaves : broadly lanceolate, rather obtuse at each end, mucronate at the apex, up to $2\frac{1}{2}$ in. long and $\frac{3}{4}$ in. broad, laxly scaly above, very scaly below, the scales unequal-sized and nearly contiguous, dry and flaky ; leaf-stalks $\frac{1}{4}$ in. long.

Inflorescence : lateral, axillary, *1-flowered*, the bud-scales persistent during flowering.

Flowers : pale-purple.

Calyx : deeply 5-lobed, lobes rounded, *scaly outside.*

Corolla : 5-lobed, laxly scaly outside *but not pubescent*, or only very slightly so.

Stamens : 10, exserted, pubescent in lower part.

Ovary : 5-celled, densely scaly ; style *pubsecent and scaly in the lower half.*

Capsule : $\frac{1}{2}$ in. long, densely scaly.

Habitat : Sikkim and Bhotan, about 9000 ft.

SPECIES UNPLACED

There are certain described species which have not been dealt with in the preceding series. Some of them are of peculiar character and their affinities are doubtful; others are imperfectly known and further material will be necessary before their relationships can be made clear; and one, *R. exasperatum* (previously undescribed), came too late to be included in its series. These species are therefore given a description in the pages which follow. Their assemblage together does not imply any connection between them. In the comment attached to each of them may be found in some cases a suggestion as to relationship. The list is as follows :—

R. asterochnoum, *Diels.*
R. coeloneurum, *Diels.*
R. dimidiatum, *Balf. f.*
R. exasperatum, *Tagg.*
R. Magorianum, *Balf. f.*
R. ochraceum, *Rehd. & Wils.*
R. platypodum, *Diels.*
R. Potanini, *Batalin.*
R. pyrrhoanthum, *Balf. f.*

RHODODENDRON ASTEROCHNOUM, *Diels* in *Fedde Repert.*, vol. 17 (1921), 196.

Illustration—

Habit : a small tree with thick flowering shoots.

Leaves : lamina leathery, oblanceolate, 18-20 cm. long, 5-6 cm. broad ; apex obtuse to rounded ; base cuneate ; upper surface at maturity glabrous, midrib grooved, primary veins about 15 on each side impressed ; under surface sprinkled with a sparse indumentum of stellate hairs ; petiole stout, flattened above with narrow lateral ridges, 1·5-2·5 cm. long, thinly floccose.

Inflorescence . many-flowered, 15-20 (?) ; flowers set oblique to pedicel ; rhachis 2-2·5 cm. long, clothed with hairs like those of leaf surface.

Pedicels : stout, 3·5-5 cm. long, glabrous or with a few hair flecks.

Calyx : small, about 2 mm. long, with 5 (?) small triangular teeth.

Corolla : funnel-campanulate, said to be white suffused rose, 4·5 cm. long ; lobes 5, broadly rounded, 1 cm. long, 2 cm. broad, deeply emarginate.

Stamens : 20, unequal, 2-3 cm. long ; filaments puberulous at base.

Pistil : 3·5-4 cm. long ; ovary oblong-conoid, 10 mm. long, ridged, glabrous ; style stout, glabrous, widened below the large discoid stigma, which is 5 mm. across, 13-14-chambered.

Capsule :

Habitat : Szechuan, Wen-chuan-Hsien. At 10,000-12,000 ft. altitude.

Very little material of this species is available. It is known only from one collecting. The describer associates it with *R. calophytum* but calls attention to the unusual indumentum of his new species. This indumentum is exactly that of the subseries Parishii in the series Irroratum, and the leaf shape is not against that allocation, but the flowers are white, the stamens number 20 (remarkable in a 5-lobed flower), the ovary is glabrous and 13-14-chambered, and the stigma is large and discoid. These facts certainly point in the direction of *R. calophytum*, while its habitat is far removed from the area of the subseries Parishii.

RHODODENDRON COELONEURUM, *Diels* in *Engl. Jahrb.*, vol. 29 (1900), 513.

ILLUSTRATION—

HABIT : a small tree about 12 ft. high, with the young shoots clad with a rufous woolly tomentum.

LEAVES : petiolate ; lamina leathery, oblong-elliptic to oblanceolate, 8-12 cm. long, 3-3·5 cm. broad ; apex obtuse or acute, apiculate ; base cuneate ; upper surface at maturity glabrescent with vestiges in the grooved midrib of a juvenile tomentum ; under surface clad with a bistrate indumentum, the upper layer a loose somewhat detersile rusty brown felt of stellately branched hairs, the under layer grey-white, composed of short-stalked floccose semi-agglutinate hairs, midrib prominent, more or less tomentose, primary veins 10-14 on each side distinctly raised ; petiole 1·5-2 cm. long.

FLOWERS : not known.

HABITAT : Szechuan, Nan Ch'uan.

This plant is only known in foliage. Its position is therefore very doubtful, but it would appear to be very near *R. Wasonii* (series Taliense, subseries Wasonii), which has a very similar indumentum.

RHODODENDRON DIMIDIATUM, *Balf. f.* in *Notes R.B.G. Edin.*, vol. 11 (1919), 53.

ILLUSTRATION—

A "rogue" which appeared at Caerhays among plants of *R. callimorphum*. Flower characters resemble those of *R. neriiflorum* but the vegetative characters those of *R. callimorphum*. The essential characters as given by Balfour are :—

HABIT : young shoots shortly setulose-glandular with brown flocks.

LEAVES : lamina oblong or oblong-oval, pointed ; base obtuse or slightly rounded or approaching cordulate ; upper surface setulose-glandular and floccose ; under surface setulose-glandular and floccose, particularly on midrib ; petiole shortly setulose-glandular and floccose.

INFLORESCENCE :

PEDICELS : floccose.

CALYX : large, half length of corolla-tube, split in front, unequally lobed, glabrous outside, spotted.

COROLLA : tubular-campanulate, deep red, spotted, with faint basal blotching.

STAMENS : glabrous.

PISTIL : ovary truncate, floccose-eglandular ; style glabrous.

Balfour's comment is :—"Surveying all the characters of the 'rogue' so far as they are known to me, and comparing them with those of the two species suggested for its parentage as a natural hybrid, the evidence seems to point in the direction of correctness of the view that hybridisation has occurred."

RHODODENDRON EXASPERATUM, *Tagg, sp. nov.*

HABIT : a shrub or small tree of 10-15 ft. ; branches below inflorescences about 1 cm. thick, densely clad with coarse glandular bristles ; perulae large, subpersistent.

LEAVES : lamina subcoriaceous, broadly oval to subobovate, 10-18 cm. long, 5-10 cm. broad ; apex rounded, shortly mucronate ; marginal bristles early deciduous ; base rounded ; upper surface dark green, almost smooth, midrib grooved, very strigose towards leaf base, primary veins 12-15 on each side slightly grooved ; under surface much paler, midrib prominent, covered with large bristles especially towards the base, the rest of the surface clad with scattered smaller glandular bristles ; petiole short for size of leaf, 1-1·5 cm. long, densely glandular-bristly.

INFLORESCENCE : a compact many-flowered umbel.

PEDICELS : about 1 cm. long, glandular or glabrous.

CALYX : 4-5 mm. long, glabrous, split to two-thirds of length into 5 shortly ovate lobes.

COROLLA : funnel-campanulate, 3·5-4 cm. long, in colour a rusty brick-red ; lobes 5, subequal, rounded, 1·5 cm. long, 2 cm. broad, slightly emarginate.

STAMENS : 10, unequal, 1·5-2·5 cm. long ; filaments glabrous.

PISTIL : about 3 cm. long ; ovary broadly conical, 5 mm. long, densely glandular-setulose ; style glabrous.

CAPSULE : immature, densely setulose, girt with persistent calyx.

HABITAT : Assam ; Delei Valley in lat. 28° In rhododendron and Abies forest at 10,000-12,000 ft. altitude.

This previously undescribed species came too late for inclusion in the Barbatum series to which it undoubtedly belongs. Its nearest allies are *R. hirtipes* and *R. glischrum*.

RHODODENDRON MAGORIANUM, *Balf. f.* in *Notes R.B.G. Edin.*, vol. 15 (1926), 111.

Illustration—*Millais Rhodos.*, 2nd series (1924), 150.

Habit : a medium-sized shrub ; young shoots at first thinly coated with indumentum of glands and floccose hairs, later glabrescent or glabrous ; branches below inflorescences about 7 mm. diameter.

Leaves : lamina leathery, obovate, 7-10 cm. long, 3-4 cm. broad ; apex rounded or broadly obtuse ; base obtuse to cuneate ; upper surface bright green, somewhat glossy, at maturity glabrous, midrib pale, very slightly grooved, primary veins about 12 on each side slightly impressed ; under surface pale green to tawny grey, thinly clad with brownish branched interlocking hairs, scattered or in patches, leaving the epidermis visible between and with fewer glands, midrib and primary veins paler, prominent ; petiole stout, 2·5 cm. long.

Inflorescence : a short racemose umbel of 11 flowers ; rhachis 1 cm. long, slightly floccose.

Pedicels : stout, 2-2·3 cm. long, more or less erect, slightly curved at apex, glandular with short-stalked white glands, also floccose.

Calyx : about 2·5 mm. long, fleshy, cup almost glabrescent outside ; lobes 6, rounded or semilunate, margin glandular and floccosely ciliate.

Corolla : funnel-shaped, 4 cm. long, white suffused rose, deeper pink on lobes, with crimson blotch at base and spots, glabrous outside and in ; lobes 6, 1·5 cm. long, 2·5 cm. broad, imbricate, emarginate.

Stamens : 12-14, unequal, 1·7-3·2 cm. long ; filaments white, finely puberulous at base.

Pistil : about 3·7 cm. long ; ovary about 7 mm. long, conoid, densely clad with an indumentum of hairs and short-stalked glands ; style clad with hairs and glands from base for more than half its length, swollen below the lobulate stigma.

Capsule :

Habitat : Western China.

This species, believed to be of Szechuan origin, was first placed with Irroratum. Its leaf indumentum and corolla bring it near to *R. Prattii* and its allies, but the calyx is small although it has the characteristic fringing glands.

The description is based on a plant grown in Cornwall under the number, Wilson 1539, which in the Wilsonian record is a species of Cocculus. Apparently no dried material of this plant has yet been forthcoming from China.

RHODODENDRONS OCHRACEUM, *Rehd. & Wils.* in *Pl. Wilsonianae*, vol. 1 (1913), 534.

Illustration—

Habit : a shrub of about 9 ft. ; young shoots slender, densely glandular with long and short-stalked glands ; older wood glabrescent ; branches below inflorescences about 3 mm. diameter.

Leaves : lamina thinly leathery, narrow-oblanceolate, 5-8 cm. long, 1·3-2·5 cm. broad ; apex shortly acuminate ; base cuneate or somewhat rounded ; upper surface at first clad with fasciculate hairs, at maturity almost glabrous but with vestigial hairs and glands in the grooved midrib, mat and somewhat rugulose, primary veins not conspicuous ; under surface pale buff, clad with a unistrate somewhat loose woolly tomentum, midrib prominent, clad with floccose hairs and stalked glands, primary veins hidden ; petiole 1-2 cm. long, somewhat pubescent and glandular.

Inflorescence : a short umbel of 8-12 flowers ; rhachis about 5 mm. long, tomentose.

Pedicels : 6-12 mm. long, glandular-hairy.

Calyx : small cupular ; lobes 5, broadly triangular acute, 2-5 mm. long, pilose.

Corolla : openly campanulate, about 3 cm. long, crimson, unspotted, the tube gradually widened from a broad base ; lobes 5, sub-rounded, mostly emarginate, about 1 cm. long, and slightly broader.

Stamens : 10-12, unequal, 1·6-2·2 cm. long ; filaments glabrous ; anthers dark purple.

Pistil : 2·5 cm. long ; ovary conical, clad with strigose hairs, many of which are gland-tipped ; style glabrous ; stigma small.

Capsule : cylindric, 2-2·5 cm. long, 5-6 mm. in diameter, sparsely glandular.

Habitat : Western Szechuan, Wa-shan. In thickets at 8000-10,000 ft. altitude.

This may find a place near *R. strigillosum* in the Barbatum series, but its foliage characters bring it near certain members of the Neriiflorum series. More ample material is required for a decision, but its probable location is with the first alternative.

RHODODENDRON PLATYPODUM, *Diels* in *Engl. Bot. Jahrb.*, vol. 29 (1900), 511.

ILLUSTRATION—

HABIT : a shrub or tree 6-20 ft. high ; shoots below inflorescences as much as 1 cm. diameter.

LEAVES : lamina leathery, broadly elliptic to rounded, 8-11 cm. long, 5-7 cm. broad ; apex rounded ; base obtuse to rounded and broadly decurrent on petiole ; upper surface at maturity glabrous, minutely rugulose, midrib in the dry state slightly raised, primary veins 16-18 on each side relatively closely set and arising at an acute angle to the midrib ; under surface pale, at maturity glabrous but minutely punctulate with vestiges of juvenile hairs or glands, epidermis somewhat papillate, midrib prominent continued and widened into broad petiole, primary veins and vein reticulations conspicuous ; petiole 1-2 cm. long, as much as 1 cm. broad, flat above with decurrent lamina.

INFLORESCENCE : a loose racemose umbel of about 15 flowers ; rhachis 4-5 cm. long, sparsely glandular ; bracts oval to obovate about 2 cm. long, densely clothed on back with long white silky hairs.

PEDICELS : about 2 cm. long, glabrous or sparsely glandular.

CALYX : 2 mm. long, fleshy, rim-like with 7 short undulate lobes.

COROLLA : funnel-campanulate, about 4 cm. long, pinkish-red, unspotted ; lobes 7, 1·3 cm. long, 1·8 cm. broad, slightly emarginate.

STAMENS : 14, very unequal, 1·5-3·5 cm. long ; filaments slender, puberulous at the base for about 6 mm. of their length ; anthers 4 mm. long, 2 mm. broad.

PISTIL : 3·5 cm. long ; ovary ovoid, slightly grooved, densely glandular with short-stalked clavate glands, 8-chambered ; style stout, glandular to the tip, glands near ovary more or less stalked, those towards stigma sessile ; stigma broad, discoid, 3-4 mm. across.

CAPSULE :

HABITAT : Szechuan ; Manchuan-hsien. In thickets at 6000-7000 ft. altitude.

This very distinctive and interesting rhododendron was described by Diels on the one gathering by Bock and Rosthorn in foliage only. Diels remarks that the leaf form is so distinctive that without flower it is readily recognised. Among recent collections by W. P. Fang, received at Edinburgh while this work was in the press, is a single specimen in flower which is undoubtedly the same species. This flowering specimen was gathered by Fang in the same locality as the type, and the flower characters as given above, based upon this specimen, indicate clearly its affinity with the members of the subseries Fortunei. Its position in the key would be near to *R. decorum*.

RHODODENDRON POTANINI, *Batalin* in *Act. Hort. Petrop.*, vol. 11 (1890-2), 489.

ILLUSTRATION—

HABIT : a tree of 15 ft. ; branchlets glabrous ; young shoots clad with cinnamon-coloured bark, older branches grey.

LEAVES : lamina leathery, oblong or subovate, 7-9 cm. long, 3·5-4 cm. broad ; apex obtuse and mucronate ; base rounded ; margin scarcely revolute ; upper surface glabrous, mat, finely reticulate ; under surface paler, smooth, midrib in the lower half densely covered with dilated branching hairs, primary veins 15-16 on each side not prominent ; petiole slender, 2-2·5 cm. long, densely clad below like midrib.

INFLORESCENCE : sub-umbellate or shortly racemose, 7-8-flowered.

PEDICELS : about 2 cm. long, suberect, clad with long thick simple rufous hairs.

CALYX : small, irregularly 5-toothed, teeth short, scarcely 1 mm. long, triangular, more or less hairy.

COROLLA : broadly and openly campanulate, 3 cm. long (white ?), unspotted, glabrous ; lobes 5, broader than long, rounded at margin, not revolute.

STAMENS : 10, included, reaching only to the base of the lobes ; filaments gradually and slightly dilated at the base and sparsely hairy in the lower half.

PISTIL : equalling in length the corolla ; ovary 4 mm. long, densely clad with adpressed thick simple rufous hairs, 6-chambered ; style glabrous.

CAPSULE :

HABITAT : Northern China, Eastern Kansu. In a valley near Tshagon and also near to the town of Hoi-ssian.

No specimens of this are available, but as far as the description goes it comes into series Taliense. Glands are not mentioned and the ovary is distinctly hairy, consequently the subseries Wasonii is indicated. Batalin says he has not seen young leaves, but from the fact that the leaf margin of mature leaves often carries rufous hairs which fall at a touch, he thinks it likely that young leaves have at first a deciduous pubescence. Its position must remain uncertain until authentic specimens have been examined. It may be akin to *R. rufum* and *R. Weldianum*.

RHODODENDRON PYRRHOANTHUM, *Balf. f.* in *Notes R.B.G. Edin.*, vol. 12 (1920), 154.

Illustration—

Habit : a prostrate shrub with stout glabrous branches ; perulae somewhat persistent.

Leaves : lamina leathery, convex above, oblong-oval, 5-8 cm. long, 2·5-4 cm. broad ; apex obtuse ; margin recurved ; base obtuse to semi-rounded ; upper surface dark green, glabrous except in the deeply grooved midrib which is lined with withered hairs, primary veins about 12 on each side deeply sunk ; under surface pale yellow-green, the prominent midrib and veins sparsely sprinkled with short glands and small floccose hairs ; petiole about 1 cm. long, grooved above and there glandular.

Inflorescence : a small umbel of about 5 flowers.

Pedicels : unequal, as much as 3 cm. long, pink tinted and thinly clad with floccose hairs and stalked glands.

Calyx : small, 2 mm. long ; lobes 5, half-moon-shaped, finely ciliate with flock-hairs and glands.

Corolla : campanulate, blood-red, unspotted, about 3·5 cm. long, tube fleshy with 5 pouches at base ; lobes 5, rounded, emarginate, about 8 mm. long, 2 cm. broad.

Stamens : 10, slightly unequal, 1·8-2·5 cm. long, clustered round style ; filaments white, slightly dilated at base, shortly puberulous in lower portion.

Pistil : shorter than corolla, 3·2 cm. long ; ovary conoid, about 6 mm. long, thinly puberulous, with white flock-hairs which are intermixed with long-stalked white glands ; style white, glabrous, scarcely enlarged below the crimson stigma.

Capsule :

Habitat : Yunnan.

This is of doubtful origin but believed to have come from Yunnan seed. The suggestion has been made that it is a hybrid. It has the general appearance of a very large *R. repens*. Further observation on this plant in cultivation is necessary, but the chances are that it will find its nearest kin in the subseries Forrestii.

APPENDIX I

LIST OF SPECIES FROM NEW GUINEA, MALAYA AND INDO-CHINA

acuminatum, Hook. f. in *Hook. Ic. Plant.*, v. (1852), t. 886 . . . . . Borneo.
agathodaemonis, J. J. Sm. in *Fedde Repert.*, xii. (1913), 209 . . . . . New Guinea.
album, Blume, *Cat. Gew. Buitz.*, 72 . . Java.
anagalliflorum, Wernh., *Trans. Linn. Soc. Bot.*, ser. 2, ix. (1916), 94 . . . New Guinea.
Andersoni, Ridley in *Kew Bull.* (1914), 209 . Borneo.
angiense, J. J. Sm. in *Nova Guin.*, xii. (1914), 133 . . . . . New Guinea.
angulatum, J. J. Sm. in *Bull. Jard. Bot. Buitz.*, ser. 2, No. 8 (1912), 50 . . . . New Guinea.
annamense, Rehder in *Journ. Arn. Arb.*, x. (1929), 182 . . . . . Annam.
apoanum, Stein in *Verhandl. Schles. Gesellsch. Vaterland. Cultur Breslau* (1883), and *Gartenfl.* (1885), 194, t. 1196 . . . Philip. Isls.
arfakianum, Becc., *Malesia*, i. (1878), 201 . New Guinea.
Armitii, F. M. Bailey in *Dept. Agric. Bris. Bot. Bull.*, x. (1895), 39 . . . . . New Guinea.
asparagoides, Wernh. in *Trans. Linn. Soc. Bot.*, ser. 2, ix. (1916), 94 . . . New Guinea.
asperum, J. J. Sm. in *Nova Guin.*, xii. (1914), 137 . . . . . New Guinea.
astrapiae, F. Förster in *Fedde Repert.*, xiii. (1914), 224 . . . . . New Guinea.
Baenitzianum, Lauterb., *Engler's Bot. Jahrb.* (1917), lv., 156 . . . . . New Guinea.
bagobonum, Copeland in *Philip. Journ. Sci.*, xl. (1929), 151 . . . . . Philip. Isls.
Beyerinckianum, Koorders in *Nova Guin. Bot.*, viii. (1912), 876 . . . . . New Guinea.
Beyerinckianum, var. **longepetiolatum,** J. J. Sm., *Nova Guin. Bot.*, xii. (1917), 504 . New Guinea.
Bodenii, Wernh. in *Trans. Linn. Soc. Bot.*, ser. 2, ix. (1916), 94 . . . . New Guinea.

brachygynum, Copeland in *Philip. Journ. Sci.*, xl. (1929), 165 . . . . . Philip. Isls.
brevitubum, J. J. Sm. in *Ic. Bogor.* (1914), t. 381 Borneo.
Brookeanum, Low ex Lindl. in *Journ. Hort. Soc.*, iii. (1848), 82 . . . . . Borneo.
buxifolium, Low ex Hook. f. in *Hook. Ic. Plant.*, t. 890 . . . . . Borneo.
calceolarioides, Wernh. in *Trans. Linn. Soc. Bot.*, ser. 2, ix. (1916), 95 . . . . New Guinea.
callichilioides, Wernh. in *Trans. Linn. Soc. Bot.*, ser. 2, ix. (1916), 95 . . . . New Guinea.
calocodon, Ridley in *Journ. Fed. Mal. States Mus.*, v. (1914), 38 . . . . . Malay Penins.
candidapiculatum, Wernh. in *Trans. Linn. Soc. Bot.*, ser. 2, ix. (1916), 96 . . . . New Guinea.
Carringtoniae, F. Muell. in *Vict. Natural*, iv. (1887), 110 . . . . . New Guinea.
Carringtoniae, var. **majus,** F. Muell. in *Nova Guin. Bot.*, xii. (1917), 511 . . . . New Guinea.
carstensense, Wernh. in *Trans. Linn. Soc. Bot.*, ser. 2, ix. (1916), 96 . . . . . New Guinea.
catanduanense (Merrill MS.), Copeland in *Philip. Journ. Sci.*, xl. (1929), 149 . . Philip. Isls.
celebicum, *DC. Prod.*, vii. (1838), 725=**malayanum** (fid. Kew Index) . . . Celebes.
chapaense, P. Dop in *Fl. Gén. L'Indo-Chine*, iii. (1930), 743 . . . . . Indo-China.
Chevalieri, P. Dop in *Revue de Bot. Appl. et D'Agric. Trop.* (1929), 256 . . . S. Annam.
Christi, Förster in *Fedde Repert.*, xiii. (1914), 222 . . . . . New Guinea.
citrinum, Hassk, *Cat. Pl. Hort. Bog. Alt.* (1844), 161 . . . . . Java.
Clementis, Merrill in *Phil. Journ. Sci. Bot.*, iii. (1908), 160, 381 . . . . . Philip. Isls.
coelorum, Wernh. in *Trans. Linn. Soc. Bot.*, ser. 2, ix. (1916), 96 . . . . . New Guinea.
Coenenii, J. J. Sm. in *Herd. Nova Guin.*, xii. (1914), 132 . . . . . New Guinea.
Commonae, Förster in *Fedde Repert.*, xiii. (1914), 223 . . . . . New Guinea.
comptum, C. H. Wright in *Kew Bull.* (1899), 103 . . . . . New Guinea.
coniferum, Wernh. in *Trans. Linn. Soc. Bot.*, ser. 2, ix. (1916), 97 . . . . . New Guinea.
Copelandii, Merrill in *Govt. Lab. Publ. Philip.*, 29 (1905), 42 . . . . . Philip. Isls.
correoides, J. J. Sm. in *Meded. Herb. Leid.*, No. 25 (1915), 2 . . . . . New Guinea.
coruscum, Ridley in *Journ. Fed. Mal. States Mus.*, v. (1914), 37 . . . . Malaya.

crassifolium, Stapf in *Trans. Linn. Soc. Bot.*, ser. 2, iv. (1894), 195 . . . . Borneo.

culminicolum, F. Muell. in *Trans. Roy. Soc. Vict. N.S.*, i. (1889), 24 . . . . New Guinea.

cuneifolium, Stapf in *Trans. Linn. Soc. Bot.*, ser. 2, iv. (1894), 198=**Quadrasianum,** var. **cuneifolium,** Copeland . . . . Borneo.

cuneifolium, Rendle in *Journ. Bot.*, xxxiv. (1896), 355=**Quadrasianum,** forma **halconense,** Copeland in *Philip. Journ. Sci.*, xl. (1929), 141 . . . . . Philip. Isls.

Curranii, Merrill in *Philip. Journ. Sci. Bot.*, iii. (1908), 255=**Whiteheadii,** fid. Copeland . Philip. Isls.

curviflorum, J. J. Sm. in *Bull. Jard. Bot. Buitz.*, ser. 2, No. 8 (1912), 50 . . . . New Guinea.

cyrtophyllum, Wernh. in *Trans. Linn. Soc. Bot.*, ser. 2, ix. (1916), 17 . . . New Guinea.

dasylepis, Schltr. in *Engler's Bot. Jahrb.*, lv. (1919), 153 . . . . . New Guinea.

Devrieseanum, Koorders in *Nova Guin. Bot.*, viii. (1909), 185 . . . . . New Guinea.

Dielsianum, Schltr. in *Engler's Bot. Jahrb.*, lv. (1918), 150 . . . . . New Guinea.

dubium, King & Gamble in *Journ. As. Soc. Beng.*, lxxiv., 2 (1906), 78 . . . Malaya.

durionifolium, Becc., *Malesia*, i. (1878), 202 . . . . . Borneo.

elegans, Ridley in *Journ. Linn. Soc.*, xxxviii. (1908), 314 . . . . . Malaya.

Englerianum, Koorders in *Nova Guin. Bot.*, viii. (1909), 186 . . . . . New Guinea.

ericoides, Low ex Hook. f. in *Ic. Plant.* (1852), t. 887 . . . . . Borneo.

excelsum, A. Chev. in *Revue de Bot. App. et D'Agric. Trop.* (1929), 255 . . . S. Annam.

filamentosum, Wernh. in *Trans. Linn. Soc. Bot.*, ser. 2, ix. (1916), 97 . . . New Guinea.

flavoviride, J. J. Sm. in *Meded. Herb. Leid.*, No. 25 (1915), 4 . . . . . New Guinea.

Fleuryi, P. Dop in *Rev. Bot. Appl. et D'Agric. Trop.* (1929), 255 . . . . . Annam.

fortunans, J. J. Sm. in *Bull. Jard. Bot. Buitz.*, ser. 3, i. (1920), 401, t. 49 . . . Borneo.

Franssenianum, J. J. Sm. in *Meded. Herb. Leid.*, No. 25 (1915), 5 . . . . . New Guinea.

fuchsioides, Schltr. in *Engler's Bot. Jahrb.*, lv. (1918), 147 . . . . . New Guinea.

Gardenia, Schltr. in *Engler's Bot. Jahrb.*, lv. (1918), 158 . . . . . New Guinea.

Gibbsiae, J. J. Sm. in *Gibb's contrib. Phytog. & Fl. Arfak. Mnts.* (1917), 169 . . . New Guinea.

Giulianettii, Lauterb. in *Schum et Lauterb. Fl. Deutsch. Sudsee* (1905), 338 . . . . New Guinea.
glabrifilum, J. J. Sm. in *Herd. Nova Guin.*, xii. (1914), 134 . . . . . New Guinea.
glabriflorum, J. J. Sm. in *Meded. Herb. Leid.*, No. 25 (1915), 6 . . . . . New Guinea.
gorumense, Schltr. in *Engler's Bot. Jahrb.*, lv. (1917), 142 . . . . . New Guinea.
gracile, Low ex Lindl. in *Journ. Hort. Soc. Lond.*, 3 (1848), 84 . . . . Borneo.
gracilentum, F. Muell. in *Trans. Roy. Soc. Vict. N.S.*, i. (1889), 22 . . . . New Guinea.
Habbemai, Koorders in *Nova Guin. Bot.*, viii. (1912), 877 . . . . . New Guinea.
hameliiflorum, Wernh. in *Trans. Linn. Soc. Bot.*, ser. 2, ix. (1916), 98 . . . New Guinea.
Hansemanni, Warb. in *Engler's Bot. Jahrb.*, xvi. (1892), 26 . . . . . New Guinea.
hatamense, Becc., *Malesia*, i. (1878), 202 . New Guinea.
Hellwigii, Warb. in *Engler's Bot. Jahrb.*, xvi. (1892), 26 . . . . . New Guinea.
Herzogii, Warb. in *Engler's Bot. Jahrb.*, xvi. (1892), 25 . . . . . New Guinea.
hirtolepidotum, J. J. Sm. in *Nova Guin.*, xii. (1914), 135 . . . . . New Guinea.
honbanianum, A. Chev. ex P. Dop in *Fl. Gén. L'Indo-Chine*, iii. (1930), 744 . . Annam.
inconspicuum, J. J. Sm. in *Meded. Herb. Leid.*, No. 25 (1915), 1 . . . . . New Guinea.
jasminiflorum, Hook., *Bot. Mag.* (1850), t. 4524 Malacca.
jasminiflorum, F. Villar. non Hook., *Nov. App.* (1883), 383=**apoanum**, fid. Copeland . Java.
javanicum, Benn., *Pl. Javan. Rar.*, 85, t. 19 . Java.
Keysseri, F. Förster in *Fedde Repert.*, xiii. (1914), 223 . . . . . New Guinea.
kinabaluense, Merrill in *Journ. As. Soc. Straits*, lxxvi. (1917), 108 . . . . . Borneo.
Klossii, Ridley in *Journ. Fed. Mal. States Mus.*, 4 (1909), 43 . . . . . Malaya.
Kochii, Stein in *Verhandl. Schles. Gesellsch. Vaterland. Cultur. Breslau* (1883), and *Gartenfl.*, xxxii. (1885), 193, t. 1195 . . Philip. Isls.
Konori, Becc., *Malesia*, i. (1878), 200 . . New Guinea.
Korthalsii, Miq. in *Ann. Mus. Bot. Lugd. Bat.*, i., 43, ... Sumatra.
lacteum, Stapf in *Trans. Linn. Soc. Bot.*, ser. 2, iv. (1894), 197=**Stapfianum** . . . Borneo.
laetum, J. J. Sm. in *Nova Guin.*, xii. (1914), 139 . . . . . New Guinea.
lampongum, Miq., *Fl. Ind. Bat. Suppl.*, i. (1861), 585=**malayanum**. . . . Java.

langbianense, A. Chev. ex P. Dop in *Fl. Gén. L'Indo-Chine*, iii. (1930), 745 . . . Annam.
laoticum, P. Dop in *Fl. Gén. L'Indo-Chine*, iii. (1930), 735 . . . . . Indo-China.
laureola, Schltr. in *Engler's Bot. Jahrb.*, lv. (1918), 151 . . . . . New Guinea.
Lauterbachianum, Förster in *Fedde Repert.*, xiii. (1914), 224 . . . . . New Guinea.
leptanthum, F. Muell. in *Trans. Roy. Soc. Vict. N.S.*, i. (1889), 24 . . . . . New Guinea.
leptocladon, P. Dop in *Fl. Gén. L'Indo-Chine*, iii. (1390), 745 . . . . . Indo-China.
leucobotrys, Ridley in *Journ. Fed. Mal. States Mus.*, 4 (1909), 43 . . . . Malaya.
leytense, Merrill in *Philip. Journ. Sci. Bot.*, x. (1915), 55 . . . . . Philip. Isls.
Lindaueanum, Koorders in *Nova Guin. Bot.*, viii. (1912), 878 . . . . . New Guinea.
Lindaueanum, var. **latifolium**, J. J. Sm. in *Nova Guin. Bot.*, xii. (1914), 130 . . . New Guinea.
lineare, Merrill, *Journ. As. Soc. Straits*, lxxvi. (1917), 108 . . . . . Borneo.
linnaeoides, Schltr. in *Engler's Bot. Jahrb.*, lv. (1917), 144 . . . . . New Guinea.
Lobbii, Veitch, *Cat.* (1870), 22; *Gard. Chron.* (1871), 1323 . . . . . Borneo.
loboense, Copeland in *Philip. Journ. Sci.*, xl. (1929), 172 . . . . . Philip. Isls.
Lochae, F. Muell. in *Vict. Nat.*, iii. (1887), 157 . . . . . Australia.
Loerzingii, J. J. Sm., *Apud. Koord. et Valeton* in *Meded. det. laudbouw.*, xviii. (1914), 107 . . . . . Java.
Loheri, Copeland in *Philip. Journ. Sci.*, 40 (1929), 166 . . . . . Philip. Isls.
lompohense, J. J. Sm. in *Bull. Jard. Bot. Buitz.*, ser. 3, i. (1920), 402, t. 50 . . Celebes.
longiflorum, Lindl. in *Journ. Hort. Soc.*, iii. (1848), 88 . . . . . Borneo.
Loureirianum, G. Don, *Gen. Syst.*, iii., 846 . Cochin-China.
Lowei, Hook. f. in *Hook Ic. Plant.*, ix. (1852), t. 883 . . . . . Borneo.
lussoniense, Rendle in *Journ. Bot.* (1896), 356 = **Vidalii**, fid. Merrill & Copeland . . Philip. Isls.
maboraense, Schltr. in *Engler's Bot. Jahrb.*, lv. (1918), 156 . . . . . New Guinea.
Macgregoriae, F. Muell. in *Journ. Bot.*, xxix. (1891), 177 . . . . . New Guinea.
malayanum, Jack in *Mal. Misc.*, ii. (1822), 17 Sumatra; Java.
malayanum, var. **axillare**, J. J. Sm. in *Ic. Bogor.* (1910), t. 322 . . . . . Borneo.

malindangense, Merrill in *Philip. Journ. Sci. Bot.*, 3 (1908), 256, 381=**Quadrasianum**, var **malindangense**, Copeland . . . Philip. Isls.
Maxwellii, L. S. Gibbs in *Journ. Lin. Soc. Bot.*, xlii. (1914), 103 . . . . . Borneo.
megalostigma, F. Muell. in *Trans. Roy. Soc. Vict. N.S.*, i. (1889), 22 . . . . . New Guinea.
melantherum, Schltr. in *Engler's Bot. Jahrb.*, lv. (1918), 152 . . . . . New Guinea.
microphyllum, J. J. Sm. in *Bull. Jard. Bot. Buitz.*, ser. 2, No. 8 (1912), 51 . . New Guinea.
mindanaense, Merrill in *Govt. Lab. Publ. Philip.*, No. 29 (1905), 41 . . . . Philip. Isls.
minimifolium, Wernh. in *Trans. Linn. Soc. Bot.*, ser. 2, ix. (1916), 98 . . . . New Guinea.
Mollianum, Koorders in *Nova Guin. Bot.*, viii. (1909), 187 . . . . . New Guinea.
Moszkowskii, Schltr. in *Engler's Bot. Jahrb.*, lv. (1918), 161 . . . . . New Guinea.
multicolor, Miq. in *Fl. Ind.-bat. Suppl.*, i. (1861), 586 . . . . . Sumatra.
neriifolium, Schltr. in *Engler's Bot. Jahrb.*, lv. (1918), 149 . . . . . New Guinea.
nhatrangense, P. Dop in *Fl. Gén. L'Indo-Chine*, iii. (1930), 743 . . . . . Annam.
Nieuwenhuisii, J. J. Sm. in *Ic. Bogor.* (1910), t. 323 . . . . . Borneo.
nodosum, C. H. Wright in *Kew Bull.* (1899), 103 New Guinea.
Nortoniae, Merrill in *Philip. Journ. Sci.*, i. (1906), suppl. 220 . . . . . Philip. Isls.
nubicola, Wernh. in *Trans. Linn. Soc. Bot.*, ser. 2, ix. (1916), 98 . . . . . New Guinea.
obscurinervium, Merrill, *Journ. As. Soc. Straits*, lxxvi. (1917), 109 . . . . Borneo.
oreadum, Wernh. in *Trans. Linn. Soc. Bot.*, ser. 2, ix. (1916), 98 . . . . . New Guinea.
orion, Ridley in *Journ. Fed. Mal. Stat. Mus.*, v. (1914), 39 . . . . . Malay Penins.
papuanum, Becc., *Malesia*, i. (1878), 201 . New Guinea.
pauciflorum, King & Gamble in *Journ. As. Soc. Beng.*, lxxiv. (1906), 75 . . . . Malay Penins.
perakense, King & Gamble in *Journ. As. Soc. Beng.*, lxxiv., 2 (1906), 76 . . . . Malay Penins.
Petelotii, P. Dop in *Fl. Gén. L'Indo-Chine*, iii. (1930), 733 . . . . . Indo-China.
phaeochiton, F. Muell. in *Trans. Roy. Soc. Vict. N.S.*, i. (1889), 23 . . . . . New Guinea.
podocarpoides, Schltr. in *Engler's Bot. Jahrb.*, lv. (1918), 149 . . . . . New Guinea.
Poilanei, P. Dop in *Fl. Gén. L'Indo-Chine*, iii. (1930), 739 . . . . . Indo-China.

Prainianum, Koorders in *Nova Guin.*, viii. (1909), 187 . . . . . New Guinea.
Pulleanum, Koorders in *Nova Guin.*, viii. (1912), 879 . . . . . New Guinea.
purpureiflorum, J. J. Sm. in *Meded. Herb. Leid.*, No. 25 (1915), 3 . . . . . New Guinea.
pusillum, J. J. Sm. in *Meded. Herb. Leid.*, No. 25 (1915), 1 . . . . . New Guinea.
Quadrasianum, Vidal, *Rev. Pl. Vasc. Filip.* (1886), 170 . . . . . Philip. Isls.
radians, J. J. Sm. in *Bull. Jard. Bot. Buitz.*, ser. 3, i. (1920), 403, t. 51 . . . . Celebes.
rarum, Schltr. in *Engler's Bot. Jahrb.*, lv. (1918), 150 . . . . . New Guinea.
retusum, Benn., *Pl. Jav. Rar.* (1838-52), 88, t. 20 . . . . . Sumatra; Java.
Robinsonii, Ridley in *Journ. Fed. Mal. Stat. Mus.*, iv. (1909), 44 . . . . . Malay Penins.
rosmarinifolium, Vidal, *Rev. Pl. Vasc. Filip.* (1886), 172 . . . . . Philip. Isls.
rugosum, Low ex Hook. f. in *Hook. Ic. Pl.*, ix. (1852), t. 885 . . . . . Borneo.
salicifolium, Becc., *Malesia*, i. (1878), 202 . Borneo.
saravanense, P. Dop in *Fl. Gén. L'Indo-Chine*, iii. (1930), 745 . . . . Indo-China.
saruwagedicum, Förster in *Fedde Repert.*, xiii. (1914), 222 . . . . . New Guinea.
saxifragoides, J. J. Sm. in *Meded. Herb. Leid.*, No. 25 (1915), 3 . . . . . New Guinea.
Schadenbergii, Warb. in *Perkins. Frag. Fl. Philip.* (1905), 172 . . . . Philip. Isls.
Schlechteri, Lauterb. in *Schum. et Lauterb. Fl. Deutsch. Sudsee.* (1905), 338 . . . New Guinea.
Schultzei, Schltr. in *Engler's Bot. Jahrb.*, lv. (1918), 154 . . . . . New Guinea.
Scortechinii, King & Gamble in *Journ. As. Soc. Beng.*, lxxiv. (1906), 76 . . . . Malay Penins.
spathulatum, Ridley in *Journ. As. Soc. Straits.*, lxi. (1912), 25 . . . . . Malay Peninś.
spectabile, Merrill in *Govt. Lab. Publ. Philip.* 29 (1905), 42 . . . . . Philip. Isls.
spondylophyllum, F. Muell. in *Trans. Roy. Soc. Vict. N.S.*, i. (1889), 23 . . . . New Guinea.
Stapfianum, Hemsl. See comment in *Bot. Mag.* (1911) under t. 8372 . . . Borneo.
stenophyllum, Hook. f. ex. Becc., *Malesia*, i. (1877), 203 . . . . . Borneo.
Stolleanum, Schltr. in *Engler's Bot. Jahrb.*, lv. (1917), 143 . . . . . New Guinea.
subcordatum, Becc., *Malesia*, i. (1878), 203 . Borneo.
subsessile, Rendle in *Journ. Bot.*, 34 (1896), 357 Philip. Isls.

subsessile, var. **baucoense**, Copeland in *Philip. Journ. Sci.*, xl. (1929), 175 . . . Philip. Isls.

taxifolium, Merrill in *Philip. Journ. Sci.*, xxx. (1926), 419 . . . . . Philip. Isls.

Teysmannii, Miq., *Fl. Ind.-Bat. Suppl.* (1861), 585 . . . . . Sumatra.

torricellense, Schltr. in *Engler's Bot. Jahrb.*, lv. (1917), 142 . . . . . New Guinea.

Toverenae, F. Muell. in *Vict. Natur.*, i. (1884), 101, and in *Trans. Roy. Soc. Vict. N.S.*, i. (1889), 22 . . . . . New Guinea.

triumphans, Yersin & Cheval. (nomen), *Chev. Cat. Pl. Jard. Bot. Saigon* (1919), 30; descript. in *Revue Bot. App. et D'Agric. Trop.* (1929), 256, pl. xi. . . . S. Annam.

tuberculiferum, J. J. Sm. in *Meded. Herb. Leid.*, No. 25 (1915), 4 . . . . . New Guinea.

tubiflorum, Zoll. in *Mor. Syst. Verz. Zoll.*, 42 = **Zollingeri**, fid. J. J. Sm. . . . Java.

tubiflorum, *DC. Prod.*, vii. (1838), 725—**malayanum**, fid. Kew Index . . . . Java.

uliginosum, J. J. Sm. in *Nova Guin.*, xii. (1914), 136 . . . . . New Guinea.

ultimum, Wernh. in *Trans. Linn. Soc. Bot.*, ser. 2, ix. (1916), 99 . . . . New Guinea.

undulaticalyx, J. J. Sm. in *Gibbs Physiog. et Fl. Arfak. Mts.* (1917), 168 . . . New Guinea.

Vanhoeffeni, Abromeit in *Bibl. Bot.*, xlii. B., 51 New Guinea.

Vanvuurenii, J. J. Sm. in *Bull. Jard. Bot. Buitz.*, ser. 3, i. (1920), 399 . . . Celebes.

variolosum, Becc., *Malesia*, i. (1878), 206 . Borneo.

velutinum, Becc., *Malesia*, i. (1878), 204 . Borneo.

Versteegii, J. J. Sm. in *Meded. Herb. Leid.*, No. 25 (1915), 2 . . . . . New Guinea.

verticillatum, Low ex Lindl. in *Journ. Hort. Soc. Lond.*, iii. (1848), 86 . . . Borneo.

verticillatum, Vidal, *Rev. Pl. Vasc. Filip.* (1886), 171 = **Vidalii**, fid. Copeland . . Borneo.

Vidalii, Rolfe in *Journ. Bot.*, 24 (1886), 348 . Philip. Isls.

villosulum, J. J. Sm. in *Meded. Herb. Leid.*, No. 25 (1915), 5 . . . . . New Guinea.

Vonroemeri, Koorders in *Nova Guin. Bot.*, viii. (1912), 879 . . . . . New Guinea.

Warianum, Schltr. in *Engler's Bot. Jahrb.*, lv. (1918), 151 . . . . . New Guinea.

Wentianum, Koorders in *Nova Guin. Bot.*, viii (1909), 188 . . . . . New Guinea.

Whiteheadii, Rendle in *Journ. Bot.*, 34 (1896), 356 . . . . . Philip. Isls.

Wilhelminae, Hochr. in *Candollea*, ii. (1925), 493 . . . . . Java.

Williamsii, Merrill MS. descript. Copeland, in *Philip. Journ. Sci.,* 40 (1929), 163 . . Philip. Isls.

Wollastonii, Wernh. in *Trans. Linn. Soc. Bot.,* ser. 2, ix. (1916), 99 . . . . New Guinea.

Wrayi, King & Gamble in *Journ. As. Soc. Beng.,* lxxiv. (1906), 75 . . . . . Malay Penins.

Wrightianum, Koorders in *Nova Guin. Bot.,* viii. (1912), 880 . . . . . New Guinea.

Wrightianum, var. **cyclopense,** J. J. Sm. in *Nova Guin.,* xii. (1914), 130 . . . . New Guinea.

Wrightianum, var. **ovalifolium,** J. J. Sm. in *Nova Guin.,* xii. (1914), 131 . . . New Guinea.

Wrightianum, var. **piliferum,** J. J. Sm. in *Nova Guin.,* xii. (1914), 131 . . . . New Guinea.

xanthopetalum, Merrill in *Govt. Lab. Publ. Philip.,* 29 (1905), 41 . . . . Philip. Isls.

Yelliottii, Warb. in *Engler's Bot. Jahrb.,* xvi. (1893), 25 . . . . . New Guinea.

Zoelleri, Warb. in *Engler's Bot. Jahrb.,* xvi. (1892), 15, 34 . . . . . New Guinea.

Zollingeri, J. J. Sm. in *Icon. Bogor.* (1910), t. 322 . . . . . Java.

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APPENDIX II

LIST OF CERTAIN RHODODENDRON NAMES WHICH ARE MORE OR LESS OBSCURE OR SIMPLY SYNONYMS NOT REFERRED TO IN THE GENERAL SURVEY OF SPECIES.

albicaule, Lévl. in *Fedde Repert.*, xiii. (1914), 148=Cavaleriei (?).
album, Buch.-Ham. ex D. Don in *Prod. Fl. Nepal.* (1825), 154=arboreum.
algarvense, Page, *Prod. Southhampt. Gard.*, 38=baeticum (?).
angustifolium, Hoppe in *Flora*, xx. (1837), 185=hirsutum.
Argyi, Lévl. in *Fedde Repert.*, xii. (1913), 102=mucronatum (?).
aristatum, Royle, *Illustr. Bot. Him.*, 42, nomen=barbatum.
aromaticum, Wall. Cat. 1520=anthopogon.
atrovirens, Hort.=dauricum var. atrovirens.
atroviride, Dunn in *Journ. Linn. Soc.*, xxxix. (1911), 484=concinnum.
aureum, Georgi, *Reis. Russ. Reich.*, i., 214=chrysanthum.
bhotanicum, Clarke in *Hook. f. Fl. Brit. Ind.*, iii. (1882), 475=Lindleyi.
Blumei, Nutt. in *Hook. Kew Journ.*, v. (1853), 366=niveum.
brachycarpum, Zucc. ex Maxim. in *Mém. Acad. Pétersb.*, xvi. (1871), 39=indicum (?).
brevitubum, Balf. f. & Cooper in *Notes R.B.G. Edin.*, x. (1917), 88=brachysiphon.
Buergeri, Miq. in *Ann. Mus. Lugd. Bot.*, i. (1863), 34=obtusum forma.
caeruleum, Lévl. in *Fedde Repert.*, xii. (1913), 284=eriandrum (?).
calcicola, in *Millais Rhodo.* (1917), 132, 150=cuneatum.
Catesbaeum, Forbes, *Hort. Woburn*, 90=ponticum hybrid (?).
Catesbaeum, *Dum.-Cours. Bot. Cult.*, ed. ii., vii., 165=ponticum hybrid (?).
caucaseum, Sims, *Bot. Mag.*, t. 1145=caucasicum.
chamaecistus, Linn.=Rhodothamnus chamaecistus.
chrysocalyx, Lévl. in *Fedde Repert.*, ii. (1906), 113; Wilson in *Journ. Arn. Arb.*, vi. (1925), 200. Species of the series Azalea.
ciliato-pedicellatum, Hayata, *Ic. Pl. Formos.*, iii. (1913), 131=Henryi.
cinereum, Balf. f. MS. in *Millais Rhodo.* (1917), 145=ravum.

confertissimum, Nakai in *Fl. Sylvat. Kov.*, viii. (1919), 32=parvifolium, Adams, var. alpinum, Glehn, *Wit.* (1876), 66; *Busch. Fl. Sib. et Orient*, extr. 23 cum. fig.

coronarium, D. Don in *Sweet Brit. Fl. Gard.*, iv. (1836), 331=luteum.

crenatum, Lévl. in *Bull. Geog. Bot.*, xxv. (1915), 20=racemosum.

dahuricum, Hort.=dauricum.

davuricum, Hort.=dauricum.

Edgarii, Gamble, *Darjeeling List, Trees*, 52=campanulatum.

ellipticum, Maxim. in *Bull. Acad. Petersb.*, xxxii. (1888), 497. Ovatum Series.

flavum, *Pall. Reise*, iii., 320=chrysanthum.

fuchsiaeflorum, Lévl. in *Fedde Repert.*, xii. (1913), 284=spinuliferum.

fuchsiifolium, Lévl. in *Fedde Repert.*, xiii. (1914), 148. Azalea Series. Quid (?).

hyacinthiflorum, Hort. ex Steud., *Nom.*, ed. ii., ii., 450=ponticum.

Hymenanthes, Makino in *Tokyo Bot. Mag.*, xvi. (1902), 33=Degronianum, in part, and Metternichii, in part.

iyoense, Nakai in *Tokyo Bot. Mag.*, xliii. (1929), 447. Azalea Series. Quid (?).

Jahandiezii, Lévl. in *Fedde Repert.*, xiii. (1914), 340=sidero-phyllum.

Jenkinsii, Nutt. in *Hook. Kew Journ.*, v. (1853), 361=Maddenii.

kansuense, Millais in *Millais Rhod.*, ii. (1924), 167. Imperfectly known; Series Taliense (?).

lamprophyllum, Hayata, *Ic. Pl. Formos.*, iii. (1913), 135=ovatum.

lancifolium, Moench., *Meth.* 45=ponticum.

latifolium, Hoppe in *Flora*, xxiii. (1840), 525=hirsutum.

latifolium, Hoffmg., *Verz. Pfl. Nachtr.*, ii., 195. North America. Quid (?).

leptanthum, Hayata in *Matsum. Ic. Pl. Kois.*, ii. (1915), 93, t. 131 =leiopodum.

leptosanthum, Hayata, *Ic. Pl. Formos.*, iii. (1913), 137=leiopodum.

leucandrum, Lévl. in *Fedde Repert.*, xii. (1913), 103=sidero-phyllum (?).

Levinei, Merrill in *Philip. Journ. Sci.*, xiii. (1918), 153. Maddenii Series.

Lowei, Loud., *Gard. Mag.*, xi. (1835), 79, 190=ponticum.

macrostemon, Maxim. in *Mém. Acad. Sci. St. Pétersb.* (1870), 41=obtusum forma.

Maximowiczianum, Lévl. in *Bull. Soc. Agric. Sci. Arts Sarthe*, vol. 39 (1903), 47. This is said by the author to be near to *R. siderophyllum*, which is a lepidote species. The material in the herbarium of the author does not bear out the description. The fragmentary specimens are those of some member of the Irroratum Series. The indumentum described by the author is not present on the specimens presumed to be the originals. The species should most fittingly be ignored.

maximum, Thunb., *Fl. Jap.*, 181=Metternichii (?).
modestum, Hook. f. in *Bot. Mag.*, t. 7686=ciliatum (?).
Morsheadianum, Millais in *Millais Rhodo.*, ii. (1924), 189. Imperfectly known; Series Arboreum.
motsuense, Lévl. in *Fedde Repert.*, xiii. (1914), 148=racemosum.
mutabile, Webb ex Royle, *Illustr. Bot. Himal.* 259=campanulatum.
myrtifolium, Lodd., *Bot. Cab.*, t. 908=ponticum.
Nakaii, Komatsu in *Ic. Plant. Koish.*, i. (1913), 145=Degronianum var. (?).
nanum, Lévl. in *Fedde Repert.*, xii. (1918). 285=polycladum.
nematocalyx, Balf. f. & W. W. Sm. in *Notes R.B.G. Edin.*, x. (1917), 124. Stamineum Series.
nobile, *Wall. Cat.*, n. 1521. Possibly a distinct species akin to *R. campanulatum.*
oblongum, Griff., *Notul.*, iv., 303; *Ic. Pl. As.*, t. 523=Griffithianum.
obtusum, Hort. ex Wats., *Dendrol.*, ii., t. 162=ponticum.
parvifolium, *Dum.-Cours. Bot. Cult.*, ed. i., 253=ponticum.
pittosporaefolium, Hemsl. in *Journ. Linn. Soc. Bot.*, xxvi. (1889), 29=stamineum.
planifolium, Nutt. in *Hook. Kew Journ.*, v. (1853), 365=campanulatum.
Pritzelianum, Diels in *Bot. Jahrb.*, xxix (1900), 510=micranthum.
psilostylum, Balf. f. in *Notes R.B.G. Edin.*, xi. (1919), 104=flavidum var. psilostylum.
puniceum, Roxb., *Hort. Beng.*, 33; *Fl. Ind.*, ii., 409=arboreum.
purpureum, Buch.-Ham. ex D. Don, *Prod. Fl. Nep.*, 154=arboreum.
Rosthornii, Diels in *Bot. Jahrb.*, xxix. (1900), 509=micranthum.
rubropunctatum, Lévl. & Vaniot. in *Fedde Repert.*, ix. (1911), 448=Bodinieri.
Seguini, Lévl. in *Fedde Repert.*, xiii. (1914), 148=Bodinieri.
speciosum, Salisb., *Prod.*, 287=ponticum.
spinigerum, Lévl. in *Bull. Geog. Bot.*, xxiv. (1914), 251=chrysocalyx.
Tanakai, Hayata, *Ic. Pl. Formos.*, iv. (1914), 15. Stamineum Series.
tapelouense, Lévl. in *Bull. Geog. Bot.*, xxv. (1915), 20=tatsienense.
Taquetii, Lévl. in *Fedde Repert.*, xii. (1913), 101=dauricum var. mucronulatum.
umbelliferum, Lévl. in *Fedde Repert.*, xii. (1913), 102. Azalea Series. Quid (?).
Vaniotii, Lévl. in *Fedde Repert.*, xiii. (1914), 148=Esquirolii.
venosum, Nutt. in *Hook. Kew Journ.*, v. (1853), 365=Falconeri.
Wallaceanum, *Millais Rhodo.*, ii. (1924), 259. Imperfectly known; Taliense Series.

H. F. T.

INDEX TO SPECIFIC NAMES

Species figured are marked thus *

aberrans, 372.
achroanthum, 391.
acraium, 199.
acuminatum (227), 842.
Adamsii, 200.
*adenogynum, 633.
adenophorum, 634.
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